THE ART BULLETIN

QUARTERLY

PUBLISHED BY THE COLLEGE ART ASSOCIATION OF AMERICA

DECEMBER 1969

VOLUME LI

NUMBER FOUR

THE ART BULLETIN

A QUARTERLY PUBLISHED BY
THE COLLEGE ART ASSOCIATION OF AMERICA

DECEMBER 1960
VOLUME XLII
NUMBER FOUR

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Articles should be addressed to the Editor of THE ART BULLETIN, Department of Art and Archaeology, Princeton University, Princeton, N.J.; books for review should be addressed to the Book Review Editor, College Art Association, 432 Fourth Ave., New York 16, N.Y.; manuscripts for the Monograph series should be addressed to the Associate Editor for Monographs, Art Department, Pomona College, Claremont, California. Before submitting manuscripts, authors are requested to consult the "Notes for Contributors" printed in the March issue.

Second class postage paid at the Post Office at New York, N.Y., October 24, 1925, under the Act of March 3, 1879 and at additional mailing offices.

THE ART BULLETIN

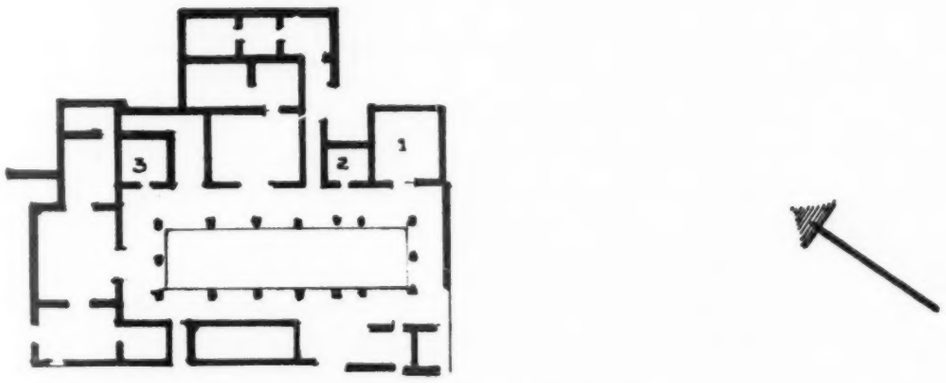
DECEMBER 1960

SUBJECT AND TECHNIQUE IN HELLENISTIC-ROMAN MOSAICS: A GANYMEDE MOSAIC FROM SICILY

KYLE M. PHILLIPS, JR.

DURING the excavation campaigns carried out by the Princeton University Archaeological Expedition at Serra Orlando, the ancient Morgantina in central Sicily, a group of interesting mosaics was discovered in a dwelling at the southwest end of the eastern hill overlooking the Agora.[1] Its initial construction, including the mosaic pavements, falls early in the reign of Hieron II of Syracuse (275-215 B.C.). The destruction of the house is closely connected with the turbulent years immediately following the death of Hieronymus (215-214 B.C.), the short-lived successor of Hieron II.[2]

The first mosaic room, with its badly preserved pavement, was discovered in 1956 at the southern end of the peristyle (text fig. 1). The pavement in this room is composed of two



Text Fig. 1. Serra Orlando, House of Ganymede

mosaics with a common background of irregular white stone tesserae serving as a border. The first mosaic (Fig. 1) lies immediately inside the threshold. Enough of it remains to reconstruct the subject matter as a griffin against a dark ground—a panel framed by a simple nonperspective meander. The central part of the floor is covered by a second mosaic (Fig. 2) having for its border an outside band with a red wave over a white field and an interior band with a perspective meander in red, black, and white. The central part is so completely destroyed that it is impossible to tell whether or not it contained a figural composition.

1. The House of Ganymede was excavated by Kenan Erim, Dr. Lucy T. Shoe, and Mario del Chiaro. Without their excellent observations, the work on the mosaics would have been impossible. I wish to thank the Directors of the Princeton University Archaeological Expedition at Serra Orlando, Professors Erik Sjöqvist and Richard Stillwell, for permission to publish the mosaics from the House of Ganymede at Morgantina. This paper was written at Princeton University at the suggestion of Professor Sjöqvist, whose encouragement and assistance are gratefully acknowledged. The criticisms of Dr. Lucy T. Shoe, Mr. Harry Edinger, Professor Henri Stern, and Mr. Donald White, all of whom read the paper at various stages, have been most rewarding. The superb photographs and detailed measurements of Mr. White, as well as the color observations of Professor Stillwell, were invaluable. Their generous consideration, without which this paper could not have been written, can only be insufficiently acknowledged. I am indebted to Captain Henry Tupper, Professor Karl Schefold, and M. Joannès Ruf, Conservateur du Musée d'Archéologie et de Peinture, Vienne, for the photographs reproduced as Figs. 16, 17, and 18.

2. The house, including a complete discussion of its date, has been published by Erik Sjöqvist, "Excavations at Morgantina (Serra Orlando) 1959: Preliminary Report IV," *American Journal of Archaeology*, LXIV, 1960, pp. 131-133, p. 27, figs. 22-26.

The second mosaic room, excavated in 1959, lies immediately to the north. The general arrangement resembles that of the first room, but a neutral white zone serves as a border. The entrance mosaic (Fig. 3) lies immediately within the door and is of the same width as the opening. A vine scroll in whitish tesserae on a dark blue-black border surrounds a light field on which a victor's fillet with dark blue and yellow twisted stripes is depicted. The second mosaic in the same room is more ambitious than those previously described. It consists of a rectangle composed of interlocking meanders which assume different perspective arrangements when seen from different sides. These two juxtaposing mosaics, although part of the same room decoration, are independent of each other in design and placement. The fillet mosaic is an emblem dependent upon the threshold for its shape, position, and orientation. It does not, as one would ordinarily expect, connect harmoniously with the central meander mosaic, which is placed within the geometric center of the room and is not oriented precisely with the door opening. Perhaps the more interesting of the two is the perspective meander, which is intended to be viewed from the rear right hand corner of the room looking towards the door. These mosaics, therefore, clearly served different functions. The entrance emblem with its symbolic fillet introduces the visitor to the dining room while the meander mosaic is intended to please and perhaps impress the distinguished guest reclining at the place of honor—the place from which the perspective quality is most effective and pronounced.

A third room, also discovered in 1959 and adjacent to the peristyle, contains a single central mosaic panel representing the rape of Ganymede (Fig. 4). The door, facing west, provides the only source of light, as in the other mosaic rooms. The mosaic, centered within the white pavement, consists of a central scene framed by a perspective meander, which resembles the two in the other rooms discussed above. The plain key is white, and the perspective effect is brought about by whitish, bluish, and red shades. Two red strips, one on the exterior and one on the interior, set off the meander from the rest of the pavement and help define it as the frame for the figural composition.[3] The colors used by the mosaicist are red, yellow, brown, blue, black, white, and various shades of these colors. The red is produced by irregular bits of terra cotta, perhaps the fragments of roof tiles. The white stone is apparently a fine white limestone, while the gray, yellow, and brownish stones are darker varieties of limestone. The black and dark blue stones are hard slate.[4]

The size, shape, and material of the tesserae vary in the several mosaics of this house. In the room of the griffin mosaic, the border consists of rather large irregularly shaved pieces of white limestone imbedded in a hard lime cement (Figs. 1 and 2). This terrazzo technique resembles the so-called *cocciopesto*, a common Sicilian type of floor also found in the House of Ganymede, where tile is used instead of the limestone. The simple red and white meander framing the griffin panel (Fig. 1) is composed of rectangular tesserae about twice as large as the black squared tesserae used for the background field of the griffin. The central mosaic (Fig. 2) is of a similar technique. The red wave pattern, formed by terra-cotta chips, is framed by a white band of irregular limestone bits about half the size of the chips in the outer white border. The tesserae used in the perspective meander, when not of terra cotta, are either squared or rectangular. The inner field has smaller, more regular gray tesserae.

3. Since the Ganymede and eagle mosaic is the major concern of this paper, detailed measurements of it will be given. The following, as well as all subsequent measurements, were supplied by Mr. Donald White: Overall dimensions (taken from the exterior edges of the frame), 105 by 130 cm; dimensions of pictorial rectangle, 74 by 97 cm; width of meander including two terra-cotta strips, 6 cm; width of two terra-cotta strips, 0.75 cm, and 1.75 cm.

4. Professor Stillwell has distinguished the following colors in the Ganymede and eagle mosaic: white, light tan, light gray, raw sienna, burnt umber, brown-pink, terra-cotta, dark red (not terra-cotta), gray-blue, dark gray-green, very dark gray. He indicates that shades of the same color can be from the same stones. They were probably picked intentionally for variation.

The second mosaic room (Fig. 3) uses even fewer squared tesserae than the first room. The border again utilizes irregular pieces of white limestone imbedded in a fine cement. In the remainder of the room, although the tesserae are laid in a more regular fashion, only the linear elements such as the vine stalks and the white meander key and certain surface areas such as the white field around the fillet are rectangular. The fillet was laid before the surrounding field since the squared tesserae were laid in bands around and within the wreath. From the evidence of these two rooms it would seem that the more linear and formalized portions of the mosaics which form the skeletal frame for the design utilize the more regular tesserae. The irregular tesserae apparently served best for borders and backgrounds.

In the room of Ganymede (Fig. 4), perhaps because of a desire for greater elegance, the neutral border is made of irregularly sized rectangles fitted together in a real mosaic rather than the terrazzo technique found in the borders of Rooms 1 and 2. The meander (Fig. 5), with its defining bands of red, is more regular. The white key, no longer of simple squared tesserae, utilizes white limestone laminations which differ in length. Unlike the meander mosaics of the other rooms, the shading is done with regularly squared, rectangular or triangular tesserae. The background of the meander, seen at the angular corners, and one half of the box fill of the lower left-hand quarter of the white key, is formed from single triangular pieces of dark blue slate. The white strips and the blue slate triangles give the meander a very strong perspective effect. Smaller tesserae, much like those used in the blue-black background of the griffin mosaic, form the ground for the figures of the eagle and Ganymede. This ground was probably filled in after the two figures were laid since a careful outlining with squared and specially adapted tesserae can be traced around them. The right leg of Ganymede (Fig. 6) clearly shows this procedure. Specially cut pieces, much like the meander laminations, appear within the figured mosaic itself. The dark eyes of Ganymede, the joints of the toes on his left foot, as well as the joints and big toe of his right foot, and his testicles, are individual tesserae cut for the particular shape required. This process of painting, as it were, by tesserae can be seen particularly in the rendering of the boots (Fig. 7). The thongs, eyes, decorative slits, and cuts above the toes are carefully drawn by small blue-black tesserae, while the red tongue and sole are fitted by burnt umber and terra-cotta bits. The overfold at the top of the boot, to which dark red and burnt umber flaps are attached, is dark red with a single line of alternating blue-black and burnt umber tesserae. The delicate white and black lines of the eagle's wings coupled with the outlining of otherwise easily confused masses, point again to the artist's pictorial intentions.[5]

From the preceding description of the mosaics it becomes apparent that both technically and artistically the mosaics from the House of Ganymede stand close to the origin of the true tessellated mosaic. A period of transition from the pebble mosaic, of which there is an example in Sicily,[6] to the tesserae mosaic has been postulated by Miss Blake as taking place early in the third century B.C.[7] Levi presented the hypothesis that such a transition can be localized in Sicily and that it occurred during the reign of Hieron II of Syracuse.[8] His argument is based primarily on

5. Tesserae measurements.
Meander: Lamination strips, maximum length, 6.9 cm; triangular dark-blue pieces, maximum, 3.6 by 3 by 2 cm; triangular background pieces (pieces which fall on diagonal color division), from 0.9 by 0.7 by 0.3 cm to nearly size of triangular blue pieces; squared background tesserae, around 0.6 cm square.
Blue-black background: Ordinary tesserae (mostly rectangular), around 0.8 by 1 cm; tesserae fitted next to figures (more regular), around 0.5 by 1 cm; tesserae near head and right hand of Ganymede (rectangular and square), 0.4 by 0.6 cm, and 0.5 cm square.
Figures: White flesh of Ganymede, around 0.5 cm square; chlamys of Ganymede, around 0.6 cm square; boots of Ganymede (roughly square), 0.4 cm to 0.6 cm square; eagle's wings (tawny part), around 0.8 cm square; eagle's wings (feather spines and division lines between feathers), long thin rectangular tesserae varying in length from 1.0 cm to 2.0 cm, and with a width of 0.3 cm.

6. Joseph I. S. Whitaker, *Motya, A Phoenician Colony in Sicily*, London, 1921, pp. 194ff., figs. 24A and 24B; Biagio Pace, *Arte e Civiltà della Sicilia antica*, Milan, 1938, II, p. 179, fig. 166.

7. Marion E. Blake, "The Pavements of the Roman Buildings of the Republic and Early Empire," *Memoirs of the American Academy in Rome*, VIII, 1930, p. 70 (henceforth Blake).

8. Doro Levi, *Antioch Mosaic Pavements*, Princeton, 1947,

the description of the famous luxury ship, the "Syracusia," constructed in Syracuse by the order of Hieron II, which was later presented to Ptolemy III and renamed the "Alexandris" (Moschion as preserved in Athenaeus, *Deipnosophistae*, v, 206d-209e). This craft, the launching of which was supervised by Archimedes, had floors which were elaborately decorated with mosaic scenes from the Iliad (Athenaeus, *Deipnosophistae*, v, 207c):

> *ταῦτα δὲ πάντα δάπεδον εἶχεν ἐν ἀβακίσκοις συγκείμενον ἐκ παντοίων λίθων, ἐν οἷς ἦν κατεσκευασμένος πᾶς ὁ περὶ τὴν Ἰλιάδα μῦθος θαυμασίως·*
> All these rooms had a tessellated flooring made of a variety of stones, in the pattern of which was wonderfully wrought the entire story of the Iliad . . .
>
> (trans. Gulick in Loeb Library)

This theory is perhaps strengthened by the Claudian luxury craft from Lake Nemi, which might reflect a conservative tradition indirectly inspired by the Sicilian "Alexandris."[9]

Since our mosaic is not later than the second quarter of the third century B.C., it vindicates the correctness of Miss Blake's chronological assumption. At the same time Morgantina, being located within the Syracusan realm of Hieron II, provides what seems to be a proof of Levi's theory regarding the Sicilian origin of the true mosaic technique. These circumstances make a further study of our mosaic particularly important, and place us in a position to contribute further to the discussion of the problem.

A comparison of the Morgantina mosaics with the Olynthus pebble mosaics reveals a number of interesting facts.[10] The pavement scheme observed in Rooms 1 and 2 at Morgantina corresponds to the Olynthus andron examples.[11] In both cases the entrance is from an open court or peristyle. The first element inside the door is a small mosaic of the same width as the door and extending to the central mosaic. In both Morgantina and Olynthus, the central mosaic dominates the room. The major difference between the two is the treatment of the border area around the center and threshold mosaics. At Olynthus this area is a raised cement platform, while at Morgantina the border is set off simply by a different mosaic treatment, a terrazzo floor, a treatment surely reminiscent of the platform. Robinson and Graham postulate, on evidence from Delos, that the disappearance of the raised cement platform took place early in the Hellenistic period.[12] Our examples from Morgantina support their view, since Rooms 1 and 2 from the House of Ganymede stand somewhere between Olynthus and the later Greek andron units as seen at Delos.

Although a comparison in subject matter between the Morgantina and Olynthus mosaics is obviously difficult, it can still be instructive if treated with care. The Morgantina Griffin room and the Bellerophon mosaic room in House A vi, 3 at Olynthus are strikingly similar (Fig. 8). The mythical griffin of the Morgantina threshold has its counterpart in the heraldic griffins attacking

1, pp. 3-5. Levi's arguments owe much to Onorio Fasiolo, *I Mosaici di Aquileia*, Rome, 1915, pp. 13ff.; Walter Leonhard, "Mosaikstudien zur Casa del Fauno in Pompeji," *Neapolis*, II, 1914, pp. 135ff.; Franz Winter, in Erich Pernice, *Die Hellenistiche Kunst in Pompeji, Band VI: Pavimente und figuerliche Mosaiken*, Berlin, 1938, pp. 1-5; Erich Pernice, *ibid.*, pp. 6-32 (henceforth Pernice). The problem of mosaic development in the western Greek area has also been discussed by Heinrich Fuhrmann, *Philoxenos von Eretria*, Goettingen, 1931, pp. 223-225.

9. Giorgio Sangiorgi, "I Pavimenti e i mosaici," in Guido Ucelli, *Le Navi di Nemi*, Rome, 1940, pp. 219-225. The combination of tesserae and sectile work might easily recall an earlier tradition.

10. For discussions of the pebble mosaic technique see Blake, pp. 68-70; Friedrich von Lorentz, "BAPBAPΩN ΥΦΑΣΜΑΤΑ," *Mitteilungen des Deutschen Archaeologischen Instituts, Roemische Abteilung*, LII, 1937, pp. 165ff., pls. 44-46. David M. Robinson, *Excavations at Olynthus, Part XII: Domestic and Public Architecture*, Baltimore, 1946, pp. 323-368; Blanche R. Brown, *Ptolemaic Paintings and Mosaics and The Alexandrian Style*, Cambridge, Massachusetts, 1957, pp. 77-82 (henceforth Brown).

11. Although the "andron units" of the Villa of Good Fortune; the House of the Comedian; A vi, 3; A vi, 4; A vi, 6; and B v, 1, have similar arrangements, I have restricted the discussion primarily to the House of the Comedian and A vi, 3. The House of the Comedian can be found in the following: David M. Robinson, *Excavations at Olynthus, Part V: Mosaics, Vases, and Lamps of Olynthus*, Baltimore, 1933, pl. VII (color), pl. 16B; David M. Robinson and J. Walter Graham, *Excavations at Olynthus, Part VIII: The Hellenic House*, Baltimore, 1938, pl. 17.1 (photograph of the andron), pl. 87 (plan of the house). House A vi, 3 which contains the Bellerophon mosaic is published in *Olynthus V*, pls. I and III (color) and pls. 12 and 13A; *Olynthus VIII*, pl. 97 (plan of block A vi). General references to the mosaics will be found in *Olynthus XII*, pp. 323-368.

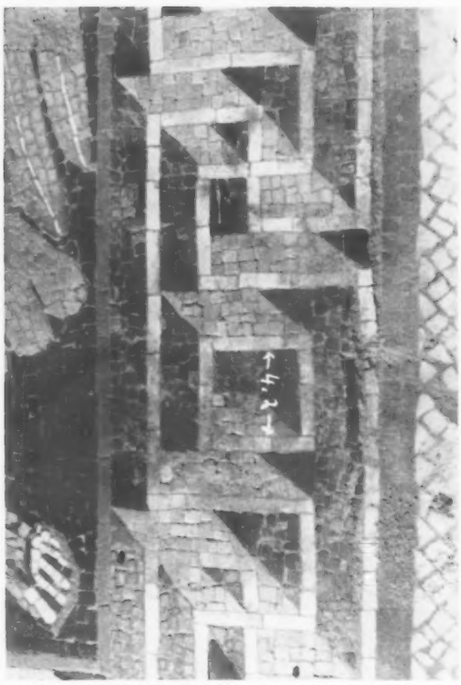
12. *Olynthus VIII*, p. 185. A partial list of Greek and related andron units appears on pp. 179ff.

1. Griffin, mosaic (detail). Serra Orlando
(photo: courtesy of the Princeton Expedition)

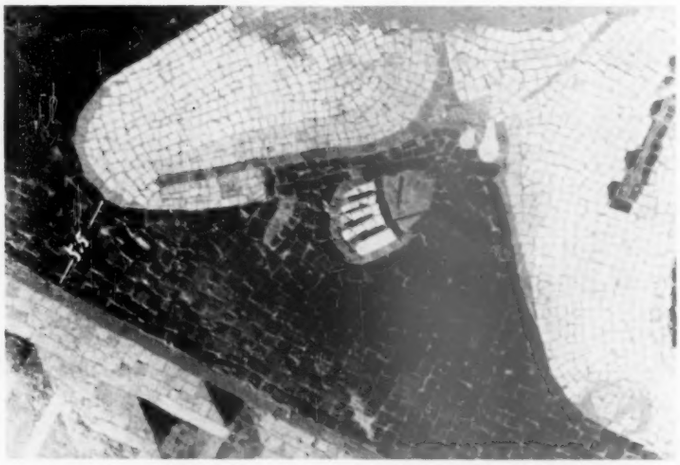
2. Pavement, mosaic (detail). Serra Orlando
(photo: courtesy of the Princeton Expedition)

3. Victor Fillet and Perspective Meander, mosaics. Serra Orlando
(photo: courtesy of the Princeton Expedition)

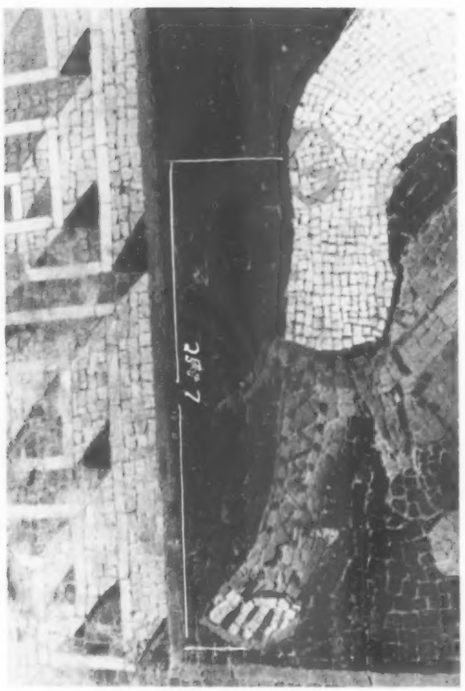
4. **Ganymede and the Eagle,** mosaic. Serra Orlando (photo: courtesy of the Princeton Expedition)



5. Detail of Figure 4 (photo: courtesy of Donald White)



6. Detail of Figure 4 (photo: courtesy of Donald White)

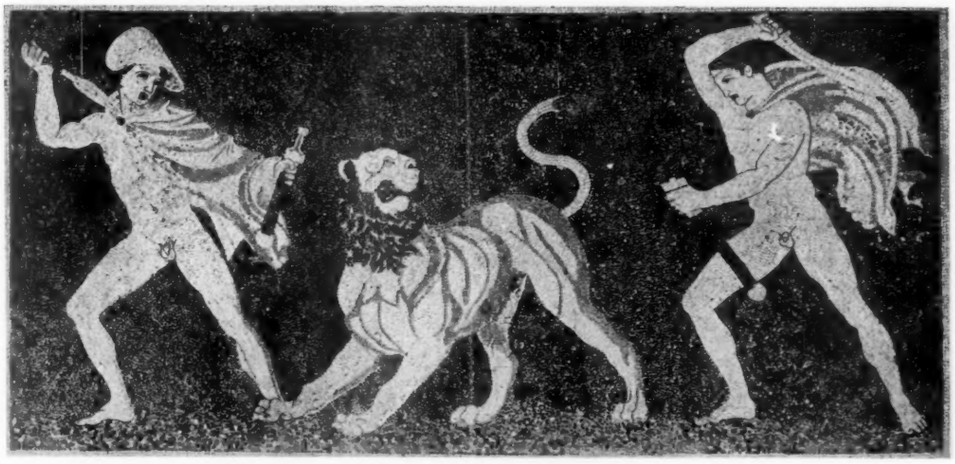


7. Detail of Figure 4 (photo: courtesy of Donald White)

8. Bellerophon, pebble mosaic. Olynthus (From D. M. Robinson, *Excavations at Olynthus, Part V*, Baltimore, 1933, pl. 12)

9. Pavement, mosaic. Palestrina (From G. Gullini, *I Mosaici di Palestrina*, Rome, 1956, pl. 4)

10. Stag Hunt, pebble mosaic. Alexandria, Graeco-Roman Museum (photo: courtesy of the Museum)



11. Lion Hunt, pebble mosaic. Pella (From Martin Robinson, *Greek Painting*, New York, 1959, p. 169)

12. Ganymede and the Eagle, mosaic. Sousse, Musée archéologique (photo: courtesy of the Museum)

13. Ganymede and the Eagle, mosaic. Sousse, Musée archéologique (From *Revue archéologique*, XXXI, 1897, pl. 10)

14. Ganymede and the Eagle, mosaic. New York, Collection of Albert Van Dam

15. Ganymede and the Eagle, mosaic. Rome, Museo Nazionale (photo: Oscar Savio)

16. Ganymede and the Eagle, mosaic. Bignor (photo: Walter Gardiner)

17. Ganymede and the Eagle, mosaic. Orbe (photo: Fotoatelier Hinz)

19. Ganymede and the Eagle, stucco relief. Pompeii, Terme del Foro (From V. Spinazzola, *Pompei alla luce degli scavi nuovi di Via dell'Abondanza, Anni 1910-1923*, Rome, 1953, Fig. 605)

18. Ganymede and the Eagle, mosaic. Vienne, Musée d'Archéologie et de Peinture (photo: R. Chaumartin)

20. Ganymede and the Eagle, relief. Formerly Florence (From *Reale Galleria di Firenze*, Serie IV, II, Florence, 1817, pl. 101)

21. Ganymede and the Eagle. Madrid, Museo del Prado (photo: Museum)

22. Ganymede and the Eagle. Vienna, Kunsthistorisches Museum (photo: Museum)

23. Ganymede and the Eagle. Rome, Museo Vaticano (photo: Anderson)

the deer in the Bellerophon room.[13] Both entrance mosaics are set off by a border. Furthermore, in the central mosaic, the border designs are identical; a wave surrounding a meander pattern. At Morgantina the corner palmettes are missing. By analogy with the Ganymede mosaic, we know that a figured center could have been possible also in the Griffin room. Although the arrangement of mosaics in the Victor Fillet room is related to the andron unit at Olynthus, the subject matter is different. The central mosaic, however, is in the same tradition as the geometric pebble mosaics.[14]

A further connection between the Morgantina mosaics and the pebble mosaics can be found in the technique. The practice of using irregular bits of stone and terra cotta is, as a matter of fact, not far removed from the use of pebbles. As an example, the wave pattern in the Griffin room is related to the wave of the Bellerophon mosaic (Figs. 2 and 8). In both cases irregular stones are regularized into a pattern. The major technical difference between the two mosaic types is not, therefore, in the actual placement or arrangement of the tesserae or irregular stones. The innovation, used in conjunction with the squared tesserae, is the levigated surface. The cut stones or irregular bits, securely placed in a hard lime cement, have been polished smooth. This final step made it possible to walk easily over the surface and to wax and polish the mosaic in order to bring out its color and design.

A recently discovered mosaic from Palestrina (Fig. 9) will perhaps demonstrate the link in the transition from the pebble to the tesserae mosaic which took place in Sicily.[15] The mosaic cannot be dated archaeologically and may possibly be much later than the Morgantina examples. In design it resembles the more elaborate formalized pebble mosaics; however, as Gullini indicates, the technique is more nearly a *pavimentum* or levigated terrazzo floor. Limestone and terra-cotta chips are used, just as at Morgantina. There are no squared tesserae within the mosaic. For this reason, the Palestrina mosaic stands as the technical but not necessarily the chronological prototype for the Morgantina mosaics. The technique can be associated most closely with sections of the Victor Fillet mosaic. In both, the irregular slivers and chips have been pressed into the lime cement and then levigated. At Morgantina, the essential step of including squared tesserae has been taken and the technical revolution from the pebble to the tesserae mosaic has been accomplished.

Therefore, from a comparison with the mosaics of Olynthus and Palestrina, these two rooms of the House of Ganymede represent an important transitional stage between the pebble and tesserae techniques. The relationship of the mosaics to the surrounding room, their composition, decorative elements, and, to a certain extent, their subject matter and general technique, indicate that the mosaicists of Morgantina were familiar with the techniques of the pebble mosaics. The infrequent use of squared tesserae to emphasize the linear elements and to serve as a background for figures indicates that the new technique had been recently introduced when our house was built in the decade of 260-250 B.C.

The Ganymede mosaic room, the furthest removed in style and technique from the pebble mosaics, throws new light on the problem of the early tessera mosaics. Squared tesserae are used in most of the mosaic but a number of exceptions occur. The meander key, as previously noted, is nearly a lamination and triangular stones are used in parts of the meander (Fig. 5). One cannot call this a sectile treatment but it is clearly related to such a technique. The sectile strips and triangles are related to the lozenge-shaped pieces in the House of the Consul Attalos at Pergamon dated by Miss Blake in the period prior to 133 B.C.[16] A threshold from a house in

13. Fantastic animals occur frequently in pebble mosaics; Lorentz, *RM*, LII, 1937, pp. 166-170.

14. The best examples of the Olynthus geometric pebble mosaics occur in the House of the Comedian. Other examples are to be seen in Houses A vi, 4; A vi, 6; and B v, 1. *Olynthus V*, pls. 14-16.

15. Giorgio Gullini, *I Mosaici di Palestrina*, Rome, 1956, pp. 10-11, pl. 4.

16. Wilhelm Doerpfeld, "Die Arbeiten zu Pergamon 1904-1905," *Mitteilungen des Kaiserlich Deutschen Archaeo-*

Palermo provides a second example of the sectile technique in a Greek area.[17] This threshold, compared by Miss Blake with the sectile pavement in the center of the Apollo temple at Pompeii,[18] is in the same room with the extremely fine Lion Hunt mosaic. A third and most important example comes from Syracuse.[19] Although only a small fragment of the original pavement is preserved, the sectile technique can be seen. This fragment is perhaps related to a later floor from Malta.[20] In all these mosaics the underlying concept is the same: to create a perspective design by using large pieces of solid color rather than small bits. The mixture of the sectile and irregularly squared tesserae found in the border of the Ganymede mosaic at Morgantina fits well with Levi's theory (see above, note 8) that the development of a true mosaic occurred in the third century B.C. in Sicily with the incrustation of small slabs of semiprecious stones.

The recent discoveries at Pella have produced pebble mosaics of extremely high quality, which can be used for comparison with the Morgantina mosaics.[21] The first point in common is the use of inset stones for the eyes. Those from Pella, evidently precious stones, are now missing. Although the insets in the Ganymede figure include other details, the practice is related. The second point of similarity is the use of division lines to define the outlines and the interior contours of the figure. The lead border strips in the Pella mosaics are paralleled by the tesserae that outline Ganymede and the eagle. The modeling lines in the two warriors of the Pella mosaic (Fig. 11) relate to the lines used to define parts of the body, such as the groin, of Ganymede and the division lines of the eagle's wing feathers (Fig. 6). The strongest link between them is their common style. The Pella pebble mosaics represent the most refined treatment in that technique. The step from the closely spaced irregular, rounded pebble to the closely spaced irregularly squared tesserae of the Ganymede mosaic is indeed not great. As Miss Blake implies,[22] a shortage of pebbles combined with a local supply of colored materials needing simply to be broken to size could easily bring about the technical revolution—a revolution perhaps seen in the Morgantina mosaic. With the levigation of the surface, the new technique had arrived.

Because of the close connection between the Morgantina mosaics and the pebble mosaics from Olynthus and Pella, it seems unlikely that the transition from pebble to tessera would have occurred much before the date of the House of Ganymede. A new technique of floor decoration, invented in Sicily at this time, would not be surprising. As Miss Shoe has indicated, a major architectural revival was taking place in Sicily under Hieron II at which time the art of architecture in the rest of the Greek world seems to be rather stagnant.[23] The development of a new molding ornament, the Hieron leaf, and a new one-piece stone sima-geison block can be surely dated to this period.[24] A new, showier mosaic technique could easily be part of the same phenom-

logischen Instituts, Athenische Abteilung, XXXII, 1907, p. 184, pl. 17; Blake, p. 37; Pernice, pp. 31-32, pl. 6; Brown, p. 70, pl. 39.2.

17. Blake, pp. 39 and 136.

18. Blake, p. 39, pl. 6.1.

19. Pernice, p. 16, pl. 14.4.

20. Thomas Ashby, "Roman Malta," *Journal of Roman Studies*, V, 1915, p. 38, fig. 6; Pernice, pl. 1.3. This floor is one of the excellent mosaics from the Villa at Rabato in Malta; Ashby, pp. 34ff., figs. 4-7, pls. 3-4; Pernice, pp. 6-12, pls. 1-3.

21. *Illustrated London News*, August 2, 1958, p. 199; Martin Robertson, *Greek Painting*, Geneva, 1959, p. 170, pls. on pp. 166 and 169. These mosaics perhaps represent the technique that one would expect to find in a Macedonian sphere of influence in the fourth century B.C. For this reason it seems possible to connect the mosaics belonging to Demetrios of Phaleron, the head of the Macedonian party in Athens, with the pebble technique (Athenaeus, *Deipnosophistae*, XII, 542d): . . . ἀνθινά τε πολλὰ τῶν ἐδαφῶν ἐν τοῖς ἀνδρῶσιν κατεσκευάζετο διαπεποικιλμένα ὑπὸ δημιουργῶν. ". . . and many floors in the dining-halls were decorated in highly elaborate flower-patterns by artists." (trans. Gulick in Loeb Library.) The story told by Galen, *Protreptikos* 8 (Ed. Kuehn, I, p. 19), about Diogenes the Cynic and his visit to a friend's house in Corinth assuredly refers to pebble mosaics: . . . τοὺς γὰρ τοίχους ἅπαντας ἀξιολόγοις γραφαῖς κεκοσμῆσθαι, τὸ δ'ἔδαφος ἐκ ψήφων πολυτελῶν συγκεῖσθαι, θεῶν εἰκόνας ἔχον ἐξ αὐτῶν διατετυπωμένας. ". . . all the walls were adorned with remarkable paintings; the pavement was put together from expensive pebbles, having representations of the gods worked out from them." There is no reason to translate ψῆφος other than as a small rounded stone. The Pella mosaics clearly show that fine figures could be drawn by means of such ψῆφοι.

22. Blake, p. 70.

23. Lucy T. Shoe, *Profiles of Western Greek Mouldings*, Rome, 1952, pp. 22-28. See also Winter in Pernice, pp. 1-2, for an indication of the underlying spirit of Western Greek development.

24. Shoe, index on p. 188, s.v. "Hieron, Sima Geison." A monument showing many of these new Syracusan features is the Great Altar of Hieron II at Syracuse.

enon. The great ship sent to Ptolemy III by Hieron II shows the royal taste.[25] The extravagant use of mosaics aboard this luxury craft, now confirmed as tessera mosaics by the Morgantina examples, points to a lavish display of a new technique.

Having seen the rather close parallels between certain features of the Morgantina mosaics and the pebble mosaics, we must consider their connections with later or undated mosaics. The first group will naturally be those mosaics that are in Sicily and Italy. One expects to find a rather strong connection between any pre-Imperial mosaic in Sicily and the Morgantina examples. One mosaic is of prime interest: the Lion Hunt mosaic from Palermo.[26] The hunt mosaic is of high quality. Gabrici, Winter, Blake, Pace, and Pernice all refer to it as "Hellenistic." Although no secure dating can be given, Miss Blake seems inclined to place the mosaic as early as the first century B.C., a date acceptable to Pernice. The importance of the sectile technique in the threshold of the room of the hunt mosaic has been discussed in connection with the lamination strips. A comparison between the Ganymede figure and the fleeing Persian hunter is instructive. The Persian is drawn with great care; the body twists and the rather complicated foreshortenings are achieved with little effort. The major difference lies in the treatment of the tesserae. As nearly as can be made out from photographs, the Palermo tesserae are more regularized, the background tesserae are more even, the figure tesserae no longer vary so drastically in size and shape, and the use of insets seems to have disappeared. The Palermo mosaic carries the refinement of the Ganymede technique to its logical conclusion. Miss Blake's hesitance about a Roman date for this mosaic seems to be confirmed by the discovery of the Morgantina mosaics. A date in the second century B.C. would not be out of place stylistically.[27]

Turning from the figured mosaics in Sicily, let us examine three more formal examples. The first fragment, from Syracuse, has been discussed in connection with the lamination strips in the border of the Ganymede and eagle mosaic. A second mosaic from the Piazza della Vittoria in Palermo is of importance.[28] This mosaic is also from the same house as the Lion Hunt. The border of the decorated center field is composed of a wave and an interior perspective meander resembling in arrangement the central mosaic in Room 1 at Morgantina. A third mosaic from Soluntum uses a wave pattern around a geometric field.[29] The last two mosaics follow the same development observed in the figured Sicilian mosaics with the mosaic treatment becoming more refined. However, the use of terra cotta, a practice seen at Morgantina, continues in the Palermo and Soluntum mosaics.[30]

A group of mosaics found in Malta, although possibly dating from the first century B.C., cannot be overlooked while we are discussing the Sicilian examples.[31] Since Malta is situated midway between Roman North Africa and Syracuse, a Sicilian influence is to be expected. Although

25. Athenaeus, *Deipnosophistae*, V, 206d-209e. Important discussions by Winter of 207c will be found in Pernice, pp. 2, 5; Blake, n. 6 on p. 70 (followed by Robinson, *Olynthus XII*); Levi, p. 5 and n. 21 on p. 5. A related instance of a new mosaic technical development in an area under influence from Western Greece, although much later, has been recently postulated by Henri Stern, "Origine et débuts de la mosaïque murale," *Université de Nancy, Annales de l'Est, 22: Études d'archéologie classique*, II, 1959, pp. 101-121.

26. Ettore Gabrici, "Ruderi romani scoperti alla Piazza della Vittoria in Palermo," *Monumenti antichi*, XXVII, 1921, cols. 190ff., fig. 6, pls. 1, 3, and 4; Winter in Pernice, pp. 3-4; Blake, pp. 136-137; Heinrich Fuhrmann, *Philoxenos von Eretria*, Goettingen, 1931, pp. 228ff., pls. 6, 8, and 9; Pace, *Arte e civiltà*, figs. 167-168; Pernice, pp. 12-14, pl. 80; Brown, p. 92.

27. The problem of the date of the Palermo mosaics has been extensively argued. Gabrici placed them in the first century of the Empire, a solution acceptable to no one. Miss Blake is inclined to date the pavements earlier on analogy with the House of the Faun in Pompeii. Fuhrmann, pp. 251ff., dates the mosaics from the middle to the end of the second century B.C. Certain points in his arguments are based on comparisons with house types from Priene and Delos. To this should be added the plan of the House of Ganymede; compare our text fig. 1 with Fuhrmann fig. 11, p. 253. His arguments from wall painting are also strengthened by wall paintings at Morgantina, as yet unpublished. Pernice places the mosaics in the first century B.C. He tries also to enforce too rigidly the Mau Pompeian wall decoration scheme in the Sicilian examples. Fuhrmann's date in the second century is most compatible with the new third century B.C. mosaics from the House of Ganymede at Morgantina.

28. Gabrici, *Monumenti antichi*, XXVII, 1921, pl. 1, House B, room t; Pernice, p. 13, pl. 4.1.

29. Pernice, pl. 4.2.

30. Pernice (Palermo mosaic pl. 4.1), p. 13; (Soluntum mosaic pl. 4.2), p. 15.

31. See note 20 above.

Pernice thinks it probable that the finer mosaics are direct imports from Sicily or at least from a Sicilian factory in Malta,[32] the mosaics could be of local production. One immediately notices the finely worked tesserae displayed in both the formal and figured elements. This technique, as in the Palermo mosaics of the second century B.C., is a refinement of the third century B.C. Morgantina mosaics. One peristyle mosaic is of particular interest. The rich double perspective meander owes much to the meander of the Victor Fillet room. We should also note that the use of tile for red is maintained in the Malta mosaics. The remainder of the mosaics discussed by Pernice are more immediately connected with the immediate prototype of the Pompeian mosaics and need not be discussed here. It does seem possible, however, that these mosaics might represent the technique and the style which one would find in the second century Villa in Syracuse.

A South Italian mosaic from Croton, although late Republican, should be mentioned.[33] The diagram of Orsi shows a border treatment related to the mosaics in Room I at Morgantina. Orsi, in describing the tesserae, mentions marble and other materials such as glass paste and terra cotta (*paste e terre colorate*). It is interesting to note that Miss Blake connects this mosaic with the sectile and pebble mosaic spirit.

The mosaics closest to the Morgantina Ganymede in style and approximate date are to be found in Egypt, Pergamon, and Delos. Before turning to these mosaics, we should recall the close trade connections between these centers, Sicily and Rome. The lavish ship, which before being given to Ptolemy III by Hieron II perhaps toured the Islands, is but one example of the royal interchange. If our previous arguments are correct, the gift of this ship represents the first introduction of tessera mosaics to Egypt and the East. The Roman domination of Sicily, complete in 201 B.C., certainly did not spell the immediate destruction of the Siceliote artistic community. The Roman trade carried out in the third and second centuries by South Italian and Sicilian Romanized Greeks must be kept in mind. It is therefore not surprising to find a Sicilian technique introduced into the centers that historically have the closest contact with Rome.

Levi implies, again from Athenaeus, that although Hieron II gave his "Syracusia" to Ptolemy III, its elaborate tessera mosaics apparently did not immediately change the mosaic tradition in Egypt. Since literary evidence is extremely vague at this point, let us turn to mosaics from Egypt—mosaics that are nearly impossible to date archaeologically.

The first mosaic, from Alexandria, representing a warrior or athlete surrounded by a border with heraldic griffins, represents the developed pebble mosaic style.[34] The right part of the original mosaic seems to have been destroyed and replaced by a red and white tessera band in antiquity. Mrs. Brown correctly observed that the pebble placement and the lead separation strips resemble closely the principle of the tessera mosaic. Since the prototype for such a development can be seen, as we have observed previously, in the pebble mosaics from Pella, the mosaic need not be eclectic and from the first century B.C. as Mrs. Brown postulates, but it is perhaps from the late fourth or early third century. In other words, the warrior mosaic represents the Egyptian-Macedonian mosaic work before the new Sicilian technique had been introduced into Egypt.

The second and by far the most important Egyptian mosaic for our study is from Alexandria-Shatbi (Fig. 10).[35] This excellent mosaic cannot be exactly dated. Although the Shatbi cemetery was in use well into the third century B.C. and the city was spreading beyond its walls into the district by the first century B.C., the possibility of a date any time in the second century cannot be excluded.[36] This mosaic, displaying a mixture of techniques, has a number of elements in common

32. Pernice, p. 10.

33. Paolo Orsi, "Prima campagna di scavi al santuario di Hera Lacinia," *Notizie degli scavi di antichità*, VIII, 1911, *Supplemento*, pp. 89ff., pls. 5-6; Blake, p. 40.

34. Blake, p. 69; Lorentz, *RM*, LII, 1937, pl. 46; Brown, p. 69 no. 51, pp. 81-82, pl. 44.2 (Bibliography, p. 69 n. 200).

35. Blake, p. 69; Evaristo Breccia, *Le Musée gréco-romain, 1925-1931*, Bergamo, 1932, pl. 55; Brown, p. 68, no. 50, pp. 77-81, pl. 44.1 (Bibliography, p. 68 n. 199).

36. Mrs. Brown, in her discussion of the date for this mosaic, excludes the possibility of any time in the third century B.C. since the Shatbi cemetery was in use at that time (pp. 39-40). A date in the second century is quite possible even from her arguments. For this reason, the "eclecticism"

with both the Pella and Morgantina mosaics. In the central portion of the mosaic the subject matter is a free variation of a hunting scene similar to the Pella lion hunt; the warriors have become *erotes* and the fierce lion a stag. The animal border implies an iconographic acquaintance with the pebble mosaic repertoire. The general technique resembles the Pella mosaics: the use of small pebbles and irregular stones for details such as the hair, the delicate shading and line drawings, and the over-all composition tie them together. Enough connections with the Morgantina mosaic can be made to establish the partial introduction of the new Sicilian technique. The vine motif, although a common Hellenistic decorative device, resembles the vine in the Victor Fillet room. The background treatment of the two vines is remarkably similar. The majority of the irregularly shaped limestone, marble, and terra-cotta tesserae are placed within the cement floor in the manner observed in the Morgantina examples, but the presence of pebbles in details such as hair excludes the possibility of a completely levigated surface. One should note, however, that the hair of Ganymede retains much of the irregularity associated with the pebble technique. The most obvious Sicilian influence appears in the threshold area of this mosaic. The key, being the linear element, has squared tesserae. The stars and rosette ornaments which can be seen within the meander squares are from sectile bits. Each petal of the rosette, as well as the stylized rays of the stars, are from separate cut and shaped sectile pieces. Certain black strips forming part of the framing rectangle of these stars and rosettes are also cut lamination strips.[37] The final indication of the new technique is seen in the outside edge of the figured border. Small cubes are used to make a single light and two dark lines. Since the technique employed by the mosaicist is derived from the Sicilian invention of the third century B.C., a direct influence through the "Syracusia" is most probable.

The final stage of development in Egypt seems to be seen in two fragments of a tessera mosaic from the palace area at Alexandria.[38] The stag and centaur confirms the presence of the developed Sicilian squared tesserae technique in Ptolemaic Alexandria.

An extremely fine mosaic, the so-called personification of Alexandria, poses an interesting problem.[39] In this mosaic we are fortunate in having an artist's signature; ΣΩΦΙΛΟΣ ΕΠΟΙΕΙ. The actual stones used in the mosaic are neither regular tesserae nor pebbles. They seem rather to be bits of colored stone, finely polished and worked. The border, with its elaborate double-key meander and turreted band, is comparable to the mosaics from the House of the Consul Attalos at Pergamon. The two must be nearly contemporary. The date, impossible to establish from technique alone, is pre-133 B.C. according to Miss Blake. This type of mosaic represents an entirely different technique from either the squared tessera or pebble mosaics and need not be considered beyond this point in our immediate problem.

From the above examples we must conclude that the tessera mosaic introduced into Egypt by the "Syracusia," renamed the "Alexandris," did influence in a rather astonishing manner the Alexandrian mosaic development. The squared tessera technique, however, represents only one phase of Egyptian mosaics. The extremely fine technique represented by the work of Sophilos continued to play an important part in the history of Alexandrian mosaics. The cruder technique employing irregularly shaped tesserae, as represented in the depiction of a negro attendant at a bath, continues into much later times.[40]

A group of fine tessera mosaics found in House IV and House V at Pergamon deserve attention.[41]

which she sees in the mosaic can be understood as a transitional stage from one technique to another. The mosaic need not be as late as the first century B.C. Since her publication of the Alexandria material, the Pella and Morgantina mosaics have been discovered, and they alter the situation considerably.

37. I wish to thank Dr. Samy Shenouda of the University of Alexandria for confirming this observation.

38. Brown, p. 69, no. 52; p. 81, pl. 45, 2 and 3 (Bibliography, p. 69 n. 201).

39. Brown, pp. 67-68, no. 48, pp. 70-74, pls. 38 and 40 (Bibliography, p. 67 n. 197).

40. Breccia, *Le Musée grèco-romain, 1925-1931*, pl. 53; Brown, pp. 69-70 (Bibliography, p. 70 n. 203).

41. Georg Kawerau and Theodor Wiegand, *Altertuemer von Pergamon, Band V, 1: Die Palaeste der Hochburg*, Berlin,

Both houses are dated, on rather difficult evidence, in the second century B.C., sometime during the reign of Eumenes II (197-158 B.C.). House V was dated slightly later than House IV because of a mosaic inscription, ΗΦΑΙΣΤΙΩΝ ΕΠΟΙΕΙ, and the peristyle plan resembling the plan of the House of the Trident at Delos. In both houses the tessera technique is used to perfection. Elaborate borders, designs, wreaths, and figures are carefully worked out with a multitude of colors and shades. The technique has progressed remarkably from its first beginnings in 260-250 B.C. in Sicily. The strongest points of comparison are to be found in the perspective meanders which utilize a fully developed squared tessera technique. The rather formalized mosaic in House V is reminiscent of the central mosaic in the Griffin room and the dark ground in the parrot emblem recalls both the blue-black of the griffin mosaic and the Ganymede. These mosaics from Pergamon are closely connected with the more refined Delos mosaics such as the Dionysos from the House of Dionysos.[42] To the same group can perhaps be added the extremely fine mosaic from a Roman Villa at Corinth.[43] There is no need to postulate a date much earlier than 146 B.C. for these mosaics, even if we accept Shear's hypothesis that they were made before the Roman destruction and re-used at a later date.

At Delos, especially in the theater section, we find close parallels to the Morgantina mosaics, but the extreme difficulty of the Delos dating should be kept in mind. The houses of the theater quarter are placed between two dates, 250 B.C. at the construction of the theater, and 88 B.C., the sack of Delos.[44] During this period the greatest constructive activity coincided with the expanded commercial activity of the thriving free port established by the authority of Rome in 167 B.C.

One of the most common types of Delos pavement is discussed under the conventional term of *opus segmentatum*.[45] In this group would probably have been counted the Morgantina mosaics in Rooms 1 and 2, had they been known. The first type, the terrazzo floor, is found, for example, in the House of the Diadumenos, the House of the Trident, and the House of Cleopatra. This type corresponds to the borders of Rooms 1 and 2 at Morgantina. A second type of irregular tesserae, comparable to the treatment found in the wavy inner border in Room 1 at Morgantina, consists of irregular terra-cotta chips. We find them used in the border of the main room of the "Agora" of the Poseidoniastes of Bérytos, and in the banded impluvium of the House of the Diadumenos. At Delos, just as at Morgantina, there is the floating border line between the more refined irregular *opus segmentatum* and the cruder *opus tessellatum*.[46]

The regular tessera technique (*opus tessellatum*) at Delos seems to be even more closely related to the Morgantina mosaics.[47] The rather elaborate impluvium mosaic from the House of the Trident is closely related to the central mosaic of Room 1 at Morgantina.[48] The presence of an additional white band and a double wave does not destroy the comparison. At Delos, the complete mosaic, not just the perspective meander and the inner field, are of small rectangular tesserae. The more primitive sectile pieces are absent. A second example, a small exedra from the House of the Trident, is also instructive.[49] An amphora, wreath, and palm branch are framed by a meander.

1930; *Text Band*, pp. 53ff., pls. 26-39; *Tafel Band*, pls. 1, 8-19; J. M. C. Toynbee and J. B. Ward Perkins, "Peopled Scrolls: A Hellenistic Motif in Imperial Art," *Papers of the British School at Rome*, XVIII (New Series V), 1950, pp. 7-8; Brown, pp. 72-73, pls. 39, 41.2.

42. Marcel Bulard, "Peintures murales et mosaïques de Délos," in Fondation Eugène Piot, *Monuments et mémoires*, XIV, 1908, pp. 199ff., pls. 14-15 (henceforth Bulard); Joseph Chamonard, "Le Quartier du Théatre," in L'École française d'Athènes, *Exploration archéologique de Délos, VIII, 1, 2*, Paris, 1922-1924, pl. 52 (henceforth *Délos VIII*); Kawerau and Wiegand, *Die Palaeste der Hochburg, Text Band*, p. 68; Brown, pp. 75-76, pls. 52.2, 53.1.

43. Theodore Shear, "Excavations at Corinth in 1925," *AJA*, XXIX, 1925, pp. 391-397, figs. 9-12.

44. *Délos VIII*, pp. 69-73; Pernice, pp. 22-31, favors a late second or early first century B.C. date for many of the mosaic pavements.

45. Bulard, pp. 186-187; *Délos VIII*, pp. 395-397. Blake, p. 23, discusses the conventional terms of *opus signinum*, *Graecanicum*, *pavimentum barbaricum* and *opus segmentatum*.

46. *Délos VIII*, pp. 395-397.

47. Bulard, pp. 188ff.; *Délos VIII*, pp. 397-402; Pernice, pp. 22-31.

48. Bulard, fig. 63, pl. 10b; *Délos VIII*, pl. 50B.

49. Bulard, pl. 10A (color); *Délos VIII*, pl. 51C; Cecil Smith, "Panathenaic Amphora: and a Delos Mosaic," *Annual of the British School at Athens*, III, 1896-1897, pp. 182ff., pl. 16a, especially p. 186. Smith considered this the earliest example of cube mosaic work from a Greek site, and he assigned it to the early second century B.C. It should be noted that the mosaic was in the Sanctuary of the Stranger Divinities at Delos.

The arrangement, including the placement within the room, resembles the pattern seen in the Ganymede room.

The most important tessera mosaics for our study were found in the guildhall or "Agora" of the Italians (*L'agora des Romains*). This "Agora" was apparently built after the destruction of Corinth in 146 B.C.[50] The first mosaic to be discussed was found on the north side of the building.[51] Although a hydria is depicted, the relationship between this representation and the amphora, palm, and crown mosaic from the House of the Trident cannot be denied. Perhaps also the Morgantina Victor Fillet mosaic is related in spirit to the two Delos examples. The finely worked tesserae used in the mosaic show a complete mastery of the technique. A dedication inscription, written in Greek, flanks the amphora:

ΠΟΠΛΙΟΣ ΣΑΤΡΙΚΑΝΙΟΣ ΠΟΠΛΙΟΥ ΥΙΟΣ.

Reinach[52] noticed that this name, among others, appeared in a dedication inscription set up in Delos to Hermes and Apollo according to Cyriacus of Ancona's account of Delos inscriptions.[53] The list of names clearly shows the international character of the Delos merchant. The Roman P. Satricanius has as companions other Romans, Romanized South Italians, and Greeks. The second mosaic, also related to the Morgantina mosaic through the wavy border and central meander, confirms another Roman patron—L. Orbius M. f.[54] According to Mommsen he organized the resistance to the Athenians in 88 B.C.

A definite date cannot be given to either of the two mosaic techniques at Delos, *opus segmentatum* and *opus tessellatum*. They are apparently contemporary and fall between the late third century B.C. and 88 B.C. The mosaics from the House of the Trident probably are about the middle of the second century B.C. since the peristyle construction has been brought into relationship with the House of Cleopatra, which has a relatively secure date of 138 B.C.[55] Even with the broad dates of late third century to 88 B.C., the Delos mosaics are later than the Morgantina examples. As has been partially indicated, the same techniques are used at both centers, but the tessera mosaics at Delos are more regular. This would be expected if the technique was developed a century earlier in Sicily. If the tessera mosaic originated in Sicily under Hieron II in the third century B.C. and appeared in Greece at centers in close commercial contact with Rome, there can, startling as it may seem, be only one answer to the question of how the new Sicilian mosaic technique traveled eastward. The Italian merchants, whether Romans or Romanized Sicilians and South Italians, were responsible for the spread. They were only following the lead started by Hieron II himself when he sent the mosaic and grain laden "Syracusia" eastwards. In the persons of P. Satricanius P. f., and L. Orbius M. f., the dedicators of mosaics in the Roman Agora, and their fellow merchants, represented in part by the dedication to Hermes and Apollo preserved in the account of Cyriacus of Ancona, we find precisely the postulated Italian merchants. A glance at the names on the inscription will make this clear (Riemann, *BCH*, I, 1877, pp. 87-88, no. 36):

Πόπλιος Σατρικάνιος Ποπλίου υἱός,
Μάαρκος Αὔδιος Μαάρκου Σαυρίας,
Δέκμος Στερτίνιος Σπορίου υἱός,
Σαραπίων Ἀλεξάνδρου υἱὸς Νεαπολείτης,

50. William B. Dinsmoor, *The Architecture of Ancient Greece*, London, 1950, p. 322.

51. Bulard, pp. 196-197, pl. 11; Pernice, p. 22; Étienne Lapalus, "L'Agora des Italiens," in L'École française d'Athènes, *Exploration archéologique de Délos, XIX*, Paris, 1939, p. 52, niche 37, fig. 45, p. 59 (Plan of Agora, figs. 2, 6).

52. Salomon Reinach, "Monuments figurés de Délos," *Bulletin de correspondance hellénique*, VIII, 1884, p. 177; Jean Hatzfeld, "Les Italiens résidant à Délos mentionnés dans les inscriptions de l'île," *BCH.*, XXXVI, 1912, p. 74; Bulard, p. 197.

53. Othon Riemann, "Inscriptions greques provenant du recueil de Cyriaque d'Ancone," *BCH.*, I, 1877, pp. 86-88, no. 36.

54. Bulard, pp. 192, 197, fig. 67; Hatzfeld, *BCH.*, XXXVI, p. 61; Pernice, p. 22, pl. 6.3; Lapalus, *Délos XIX*, p. 57, niche 10, fig. 49, p. 59 (Plan of Agora, figs. 2, 6).

55. *Délos VIII*, pp. 70-71; Pernice, p. 25.

Σίμαλος Τιμάρχου υἱὸς Ταραντῖνος, Γναῖος
Λοκρήτιος Λευκίου υἱός, Πόπλιος Καστρίκιος
Ποπλίου, Δέκμος Στερτίνιος Δέκμου Δάμας,
Μάαρκος Ἀρέλιος Κοϊντου, Γάϊος Σανψ[ή]ϊος
Αὔλου Ζηνόδωρος, Τίτος Νοὔϊος Αὔλου
Τρύψων Ἑρμαίῃ [*sic*] καὶ Ἀπόλλωνι.

These are the wealthy Italian merchants who adorned their agora and great island houses with the showy, obviously expensive mosaics they were accustomed to in Sicily and South Italy.

Shifting the origin of the tessera mosaic from the vague East or Alexandria to the third century Hellenistic Greek center of Syracuse may possibly meet with some objections, but this solution, if adopted on the strength of the evidence from Morgantina, resolves a number of otherwise inexplicable problems. The third century B.C. Syracusan technique quickly spread from Sicily, along the Roman trade routes, East to Alexandria, Delos, and Pergamon and South to Malta. In view of the well-documented and lively contacts between these centers and Rome in the second century B.C., the possibility should not be excluded that the Pompeian and Roman mosaics received the Syracusan technique indirectly, as it were, through these more flourishing commercial centers. Since the Ganymede mosaic from Morgantina stands as the technical and artistic prototype for the Palermo Lion Hunt mosaic, the complete development from Syracuse to Pompeii can now be traced.

Having established the technical importance of the Morgantina mosaics, let us turn to the iconographic and interpretative problems raised by our version of the motif of the eagle and Ganymede. As mentioned previously, the house dates from about 260-250 B.C., making this mosaic not only the earliest extant tessera mosaic, but also perhaps the earliest pictorial representation of Ganymede and the eagle.[56] For this reason, a rather detailed analysis of the mosaic will be given before turning to comparative material. In this analysis I hope to point up certain fundamental problems of composition, space, and movement which have direct bearing on the meaning and interpretation of the mosaic scene.

The central mosaic panel depicts Ganymede being carried aloft by the eagle of Zeus (Fig. 4). Fortunately enough of the mosaic remains to allow a clear understanding of the scene. The bird, with his great yellow wings outstretched, has seized Ganymede and is flying towards Olympus. The two figures, moving against the dark blue-black background, seem partially suspended in their quick movement. Ganymede, with his red cap, chlamys, and boots, is a vigorous Phrygian boy approaching puberty. His body is curiously hard and virile even though his skin is pure white. The contrast between masculine form and feminine color indicates a rather sensitive understanding of a complicated subject matter. The position of Ganymede expresses the nature of the action. Not yet completely recovered from the initial shock of being seized, Ganymede gazes at his abductor. The position of the arms and legs, resembling that of a struggling child at the moment it is picked up from a rapid run, emphasizes the fright of Ganymede and his attempt to escape. His right arm stretches forth to fend off the eagle's wing, the right leg is cocked ready to spring, the left leg violently thrusts to the side in an abortive jump. In this wild flurry, Ganymede has discarded the right half of his shepherd's flute but holds tight in his left hand the remaining part, an action which stresses his swift abduction.[57] The Phrygian boy has momentarily assumed a suppliant position, a position which will be broken by his next irrational move-

56. An exhaustive list of Ganymede and eagle representations has been recently compiled by Hellmut Sichtermann, *Ganymed, Mythos und Gestalt in der antiken Kunst*, Berlin, n.d. (after 1948), pp. 74ff. (henceforth Sichtermann).

57. Théodor Reinach, "Tibia," in Daremberg and Saglio, *Dictionnaire des antiquités grecques et romaines*, V, pts. 1-2, pp. 300-332, especially figs. 6944, 6980, and 6985.

ment.[58] The eagle is also depicted in an unusual pose. The spread wings, rendered at the moment before the eagle will flap them, frame Ganymede and seem momentarily to stop the movement. The diagonal line of his tail, accentuated by the red chlamys of Ganymede, indicates the swift motion of the group upwards towards the left.

Closely connected with the general composition is the actual placement of the group within the rectangular field described by the meander frame. The main flight line falls on the diagonal axis extending from the lower right corner of the pictorial rectangle to the upper left corner. This line starts with the outstretched left leg of Ganymede, continues up his body past his paired left hand and right foot, and is completed by his raised right hand and the crest of the right wing of the eagle. Further emphasis on the diagonal flight is provided by the chlamys which flutters behind Ganymede in line with the eagle's tail. The tips of the feathers of the eagle's right wing, which are lower than those of the left wing, tend to emphasize the movement to the viewer's left. Secondary axes are deliberately placed against the dominating diagonal flight. The first of these, the vertical or lateral axis, is indicated by the outspread wings which center the group within the pictorial rectangle. The great side feathers are nearly parallel to the frame and are cut across by the line of Ganymede's body. The second, the cross diagonal from the lower left hand corner to the upper right hand corner, is in actuality a number of small lines that balance each other and return to accentuate the main flight diagonal. The bent right knee pointing to the lower left corner provides a partial cross axis. This line is not allowed to continue but is brought back to the central portion of the composition by the lower leg and foot, and is balanced, as previously observed, by the lowered left hand. Ganymede's gaze, which again falls on the secondary diagonal, is returned by the conjectured glance of the eagle.

By this complex use of visual lines and movement, certain areas of the pictorial rectangle are either denied or stressed. The lower left and the upper right corners are negated by the balancing of the partial cross axes and their eventual return to accentuate the main flight diagonal. The central area, obviously the pictorial focus, is a confusion of movements. As observed, the diagonal flight line is accentuated by Ganymede, the tail of the eagle and the chlamys. At the same time, the great enfolding wings of the eagle momentarily stop the action and add an illusory vertical direction. Beyond this complex arrangement the group of Ganymede and the eagle, although represented from below, rises out of the floor in its diagonal flight. This final three-dimensional accomplishment is achieved by three means. In the first place, the dark background robs one of any fixed point in space for the group; secondly, the several receding planes, as seen in the sequence of Ganymede, chlamys, eagle's tail, and void, give depth and dimension; and finally, the frame, since it does not touch the group, defines but does not restrict the action. The foreshortening of the right leg is perhaps the most refined indication of dimensionality. Two remaining areas within the frame are of interest. The lower right corner, with the extended foot of Ganymede, is the starting point of the action which will speedily pass through the open upper corner to complete the picture.

The perspective meander, although possibly an addition of the Morgantina mosaicist replacing a different type of wall frame associated with an assumed pictorial prototype, is an integral part of the floor mosaic composition. Since the mosaic is centered within the room, the light enters from the peristyle through the door and strikes the mosaic diagonally in line with both the perspective meander and the main flight direction. This by itself accentuates the movement away from the viewer and to his left. However, two other features of the meander are of importance. In the first place, the meander forces the viewer to stand slightly to the right of the frame in

58. The following examples will show this position: Nereo Alfieri and Paolo Arias, *Spina*, Munich, 1958, pl. 99 (Cassandra being slain by Clytemnestra); pl. 8 (Theseus and the Minotaur). Pace, *Arte e civiltà*, fig. 169 (Theseus and the Minotaur).

order to understand the perspective. At this point one immediately observes that the perspective lines continue the diagonal flight of the group. The second feature is more mechanical. The perspective lines in the right side and base of the frame are directed toward the figure composition, while the lines of the left side and top of the frame move away from Ganymede and the eagle to the rear and left of the viewer.

The pictorial quality of the mosaic, although established by the internal composition, movement, and use of the frame, becomes even more obvious in the color treatment. The white flesh of Ganymede stands out against the blue sky and contrasts with the yellow-brown feathers of the bird. A rather delicate chiaroscuro in the right palm, on the left knee, and around the eyes of Ganymede helps model the forms. The foreshortened right leg and the groin are boldly outlined in a purely pictorial way. The red cap and chlamys are skillfully rendered to accentuate the motion and to contrast with the eagle feathers. Most careful attention is given to the elaborate Phrygian boots; thongs, eyes, flaps, and soles are carefully drawn in contrasting colors. The same pictorial treatment has been given to the eagle. The great wing feathers are separated by black division lines while the feather spine is indicated by a thin line of white tesserae. A white band cuts across the wing to add further color. Brown division lines separate the edge of Ganymede's chlamys and his left boot with its decorative fringes from the eagle's tail.

With this analysis as a background, the iconographic and pictorial problems can be approached. Fortunately a rather extensive group of mosaics allows us to investigate the theme first within the limits of the same medium. This will be revealing since the usual approach is through the sculptural study. Sichtermann, following Lucas, subdivides the Ganymede motif into two main iconographic schemes: *Entfuehrung* (abduction) and *Ergreifung* (apprehension).[59] As will be gathered from our discussion, this rigid compartmentalization of the representations is not always valid. Surprisingly enough the mosaics closest in composition and color to our abduction scene stem from the so-called apprehension group. Of these, three are from Tunis in North Africa, and one is from a villa at Baccano outside Rome. Two major differences must be treated immediately. The four mosaics show Ganymede and the eagle on the ground, while the Morgantina mosaic shows Ganymede being carried through the air. In all but one of the later mosaics, the action is oriented to the right, while in the Morgantina mosaic it is oriented to the left. The first difference, although apparently more difficult to explain, is in reality rather simple. The complicated and vigorous pose of the legs shown in the third century B.C. Morgantina mosaic obviously confused or disturbed the later mosaic artists. In order to overcome the difficulties inherent in the scheme of motion, the action was brought, as one might say, down to earth. In the first and least imaginative of the three Tunisian mosaics (Fig. 12), a simple ground shadow was added, pressing Ganymede hard into the earth.[60] The leg position is rather poorly rendered but is very close to that of the Morgantina mosaic. The same process of using a simple ground shadow was

59. Although Sichtermann's study is the most complete work on Ganymede and the eagle, certain fundamental ideas were put forth by Lucas: Hans Lucas, "Die Knabenstatue von Subiaco," *Neue Jahrbuecher fuer das Klassiche Altertum, Geschichte und Deutsche Litteratur, und fuer Paedagogik*, IX, 1902, pp. 427ff. (henceforth Lucas, *Neue Jahrbuecher*, IX); — "Die Ganymedesstatue von Ephesos," *Jahreshefte des Oesterreichischen archaeologischen Institutes in Wien*, IX, 1906, pp. 269ff. (henceforth Lucas, *Jahreshefte*, IX).

60. P. Gauckler, E. Gouvet, G. Hannezo, *Musées et collections archéologiques de l'Algérie et de la Tunisie, XI: Musées de Sousse*, Paris, 1902, p. 34, pl. 9, fig. 3 (henceforth, *Musées de Sousse*); Lucas, *Jahreshefte*, IX, p. 271 n. 9; Paul Gauckler, *Inventaire des mosaïques de la Gaule et de l'Afrique, II: Afrique Proconsulaire (Tunisie)*, Paris, 1910, p. 66, no. 175 (henceforth Gauckler, *Afrique Proconsulaire*); Sichtermann, p. 89, no. 253. M. Foucher, Conservateur du Musée archéologique de Sousse, who provided a photograph of this mosaic has generously made available his comments on the Ganymede mosaics from Tunisia which form part of his forthcoming work. The mosaics in question are Gauckler, *Afrique Proconsulaire*, no. 175 (Foucher no. 57.043), and Gauckler, *ibid.*, no. 136 (Foucher no. 57.092). Louis Foucher, *Inventaire des mosaïques, feuille no. 57 de l'atlas archéologique, Sousse*, Tunis, 1960, p. 21, no. 57.043; "Nous ne partageons pas l'opinion de P. Gauckler qui considérait cette oeuvre comme médiocre et lui préférait le Ganymède de la maison de l'arsenal (57.092). La simplicité de l'encadrement, l'emploi de la ligne de terre, la façon dont sont traitées les plumes de l'aigle qui montre le désir de l'artiste de rivaliser avec un peintre nous incitent à dater le pavement du milieu du II^e siècle!"

also employed in the second Tunisian mosaic (Fig. 14) from the collection of Albert Van Dam.[61] Here the solution is more successful. The most effective, and therefore deceptive transition, can be seen in the third Tunisian mosaic (Fig. 13).[62] The bent knee rests on a rock while the extended leg pushes against the ground. A rather careful shading completes the transition from air to ground. In the Baccano mosaic (Fig. 15), the simple shadow has been reinforced by the addition of two flanking trees.[63] This solution, although logical, does not really solve the problem. Working from the Morgantina mosaic, we can see how the flying abduction scene has become the static apprehension position with the minimum change in composition. We shall also see how the process can reverse itself at a later point in the iconographic development.

The difference in orientation poses a greater problem since the variations are more complex. We must decide, if possible, whether the Morgantina mosaic represents the prototype. With the exception of the Van Dam piece, which somehow has lost most of the eagle (only a small part of the head can be seen in the Schulman catalogue), the later mosaics are remarkably similar in pose and composition. The Van Dam mosaic (Fig. 14), although apparently closest in orientation to the Morgantina mosaic, is in actuality a mirror image of the third Tunisian mosaic (Fig. 13) and therefore belongs to that rather closely connected group. The first variation, which can be disregarded, concerns the position of the eagle. The parallel composition of the eagle and Ganymede in the Morgantina mosaic is compatible with the flying position. The line from the extended right hand of Ganymede through his left leg accentuates the flight line, as does the red chlamys in front of the eagle's tail. The Baccano mosaic (Fig. 15) does retain the parallel lines of the two figures, although the action is oriented differently. The resulting composition, even though the shadow and trees tie the group to the ground, leaves one in doubt as to the exact meaning; no clear compositional distinction between the aerial and the ground positions is made. The third Tunisian mosaic solves most effectively the orientation problems arising from the transition from *abduction* to *apprehension*. By turning the eagle, a chiastic composition is produced. The group, thus, becomes immediately static. In order to emphasize, to an even greater extent, its static nature, the chlamys of Ganymede billows out around the boy's figure. Since we have already seen the addition of the ground line to the essential flying position of Ganymede, a change in the flight direction of the eagle is not at all surprising. Backed by the evidence from the Baccano mosaic, we are justified in assuming that the Morgantina mosaic reflects the original composition of parallel lines. The eagle's position in the Tunisian mosaics can safely be called a deviation from the parallel line composition, and we are left with two alternative positions—a parallel composition flying to the right or to the left.

Having established the original flying nature of the group, carried out in parallel lines, we must now turn to the Ganymede figure. The Baccano and the three Tunisian mosaics are clearly products of the same tradition. The figures would be mirror images of our Ganymede figure if the arms were reversed. This process would cause a major problem for the representation. As has been observed, the Baccano mosaic retains many flying features: if the left arm were raised and the right arm lowered, it would be in a complete parallel composition; a composition clearly

61. Mr. Albert Van Dam has kindly granted permission for the study and publication of this mosaic. A small plate of the mosaic exists in a sales catalogue, Hans Schulman, *Saturday, November 21st, 1959*, no. 700, pl. 8.

62. Paul Gauckler, "Les mosaïques de l'arsenal à Sousse," *Révue archéologique*, XXXI, 1897, pp. 8-22, pls. 9bis, 10, 12; *Musées de Sousse*, pp. 29-30, pl. 7; Lucas, *Neue Jahrbuecher*, IX, pp. 431-432, pl. 2.2; Lucas, *Jahreshefte*, IX, p. 271 (Group II), p. 276, fig. 70; Gauckler, *Afrique Proconsulaire*, p. 54, no. 136 (plate); Saloman Reinach, *Répertoire de peintures grecques et romaines*, Paris, 1922, p. 14, fig. 10, p. 354, fig. 10; René Cagnat and Victor Chapot, *Manuel d'archéologie romaine*, Paris, 1920, II, p. 56, fig. 384; Sichtermann, p. 67, p. 89, no. 252, pl. 12.2; Andreas Rumpf, "Malerei und Zeichnung," in Walter Otto, *Handbuch der Archaeologie, sechsten Lieferung*, IV, pt. 1, p. 187, pl. 66.9.

63. Lucas, *Neue Jahrbuecher*, IX, p. 431, pl. 2.1; Lucas, *Jahreshefte*, p. 276; Wolfgang Helbig, *Fuehrer durch die oeffentlichen Sammlungen klassicher Altertuemer in Rom*, 3rd ed., Leipzig, 1913, II, pp. 185-186, no. 1440; Marion E. Blake, "Roman Mosaics of the Third Century after Christ," *Memoirs of the American Academy in Rome*, XVII, 1940, p. 106, pl. 21.7; Paul Herrmann, *Denkmaeler der Malerei des Altertums*, Serie II (ed. Reinhard Herbig), Munich, 1934-1950, pl. 242b; Sichtermann, p. 67, p. 89, no. 250, pl. 11.3.

impossible for the apprehension of Ganymede. This reasoning applies even more strongly to the Tunisian group. It therefore seems that the later artists, working from the flying Ganymede, switched the arm position in order to make it more compatible with the actual rape scene. Remaining is the orientation problem. Although the Morgantina mosaic is more than four centuries nearer the prototype than the later mosaics, one is inclined to orient the group to the viewer's right because the majority of the later representations in painting and mosaic move in that direction.

The color problem should next be approached. The dark background of the Morgantina mosaic may be accepted as close to the archetype. The use of a white tessera background for the later mosaics is a standard feature of their date. The artistic function of the dark color has been discussed above in the reference to movement in space. When the later artists copied the prototype, much was lost by the substitution of the flat, static white. Otherwise, the correspondence in color between the Morgantina, Baccano, and the third Tunisian mosaic is remarkable. The only difference is in the flesh color of Ganymede, which tends to become ruddier in the later mosaics. The masculine-feminine nature expressed by color in the Morgantina mosaic has been approached differently. In the later mosaics, the flesh color is normal for an active outdoor male, but the body has become much more effeminate in form. The major color divisions such as red cap and chlamys, variegated red and yellow boots, dark hair and tawny eagle feathers are present in all of the mosaics. The first Tunisian mosaic deviates in its use of a blue chlamys. This correspondence in color, therefore, adds one more bit of evidence for a common prototype.

Since we have seen one transition from a flying group to a ground group, we should not be surprised to see a later reversal. Two mosaics seem to represent this deviation. They were found, perhaps significantly, to the North in Bignor in Sussex (Fig. 16),[64] and at Orbe in Switzerland (Fig. 17).[65] In both, the action is to the viewer's right. The eagle has his great wings spread, and his beak touches the head of Ganymede. Ganymede is being lifted through the air in a posture rather similar to the Baccano mosaic. The essential change is easily discernible: the ground line has been removed and the left leg of Ganymede (originally bent) now trails behind. The eagle's head turns to the left rather than to the right as it does in the Tunisian mosaics. As has been observed, the Tunisian artist most skilfully turned the eagle's position to change the composition, and the turning of the head is one definite part of this change. The Baccano position, therefore, was more closely followed when the later artists wished to return the group to flight. In other respects the two mosaics from Bignor and Orbe are more closely related to the Tunisian group. The chlamys is much larger and billows around the body of Ganymede as in the static Tunisian examples. In the Bignor mosaic, the color deviation resembles that found in the first Tunisian mosaic. The arm position in the Bignor and Orbe mosaics is more varied. Although the left arm holds the staff, it is moved in position and the right arm is lowered in the Orbe example and outstretched in the Bignor mosaic. One can discern a certain derivation from the Morgantina mosaic's prototype. The eagle is similar and the parallel composition is related. Both of these factors, however, probably stem from the immediate prototype of the Bignor and Orbe mosaics. A mosaic such as the Roman Baccano mosaic seems most likely to have influenced these two Northern mosaics.

64. Samuel Lysons, "Remains of a Roman Villa Discovered at Bignor in Sussex," *Reliquiae Britannico Romanae*, London, 1817, III, pl. 7; Thomas Morgan, *Romano-British Mosaic Pavements*, London, 1886, p. 203 and facing plate; Lucas, *Jahreshefte*, IX, p. 271 (Group II); Reinach, *Répertoire de peintures grecques et romaines*, p. 15, fig. 7; S. E. Winbolt, "Romano-British Sussex," in *The Victoria History of the County of Sussex* (ed. L. F. Salzman), London, 1935, III, pp. 20-23, pl. facing p. 22; Sichtermann, p. 84, no. 145.

65. Lucas, *Neue Jahrbuecher*, IX, p. 431 n. 2; Adrien Blanchet, *Inventaire des mosaïques de la Gaule, I, ii: Lugdunaise, Belgique et Germanie*, Paris, 1909, p. 152, no. 1382; Reinach, *Répertoire de peintures grecques et romaines*, p. 5, fig. 1; Waldemar Deonna, *L'Art romain en Suisse*, Geneva, 1942, pl. 51; Felix Staehelin, *Die Schweiz in Roemischer Zeit*, Basel, 1948, fig. 173; Sichtermann, p. 84, no. 146; V. Clairmont von Gonzenbach, *Die Roemischen Mosaiken der Schweiz*, Basel, 1960, p. 190, pl. 62. (The last bibliographical entry was kindly supplied by the author while the book was in press.)

The final development seems to be represented by the Vienne (Isère) mosaic (Fig. 18).[66] By turning the Ganymede figure to the front and by bringing the legs down so that they fall in a vertical position, the group becomes an upward-flying group. A comparison with the Bignor mosaic makes this clear. The only dissimilarity beyond the change in the position of the legs is the direction of Ganymede's gaze; the great wings of the eagle, the arm position, and the billowing cape are alike. As noted, the only change required would have been a slight twist and a drop in the leg position. The eagle and Ganymede are again in a parallel flight direction, this time straight up to Zeus.

By this rather tedious partial analysis of the Ganymede mosaics, we are able to see the development of one motif in classical art. From the free flying group of the third century B.C., two later traditions arise, the *Entfuehrung* (abduction) and *Ergreifung* (apprehension) types. The simple addition of props brings these rather drastic changes about. A ground shadow, a change in the direction of the eagle, or a pair of trees, brings the spontaneous Hellenistic prototype to ground. From the grounded group, a second flying type is created by removing the props. This time the left leg is made hanging down and the extremely dynamic and unconventional Hellenistic group is lost. Last of all, the vertical flight comes about by a simple twist of the second flying type. Unfortunately there is no way to date any of these steps. We can be assured that they belong to a development later than the Morgantina mosaic.

Having established the Ganymede and eagle composition represented by the Morgantina mosaic and reflected in later mosaics, let us now look at representations in other media in order to see if any can be coordinated within our development. Since the border lines between the different media of painting, mosaic, and relief are often vague, a rather close parallel is to be expected.

A stucco relief from the tepidarium of the Terme del Foro at Pompeii (Fig. 19), although badly damaged, is iconographically dependent upon the prototype reflected by the Morgantina mosaic.[67] The position of both Ganymede and the eagle recalls the Morgantina example; however, much of the three-dimensionality of the original has been lost by the substitution of the round frame and the inclusion of the group within the curved ceiling. The upward and diagonal flight has been retained. This relief, obviously before A.D. 79, provides an essential link between the third century B.C. Ganymede and eagle group from Morgantina and the later examples. It strengthens the possibility that the Morgantina mosaic reflects accurately the orientation of the prototype even though the weight of number seemed to favor the direction of the group seen in the Baccano mosaic.

A sculptured relief, formerly in Florence (Fig. 20), illustrates a further development.[68] The composition follows closely the third Tunisian mosaic, but the figure of Ganymede is near to the Morgantina mosaic. Ganymede is not the effeminate youth seen in the later mosaics but a warrior; a spear has been rather crudely placed in his right hand. The excellent foreshortening seen in the bent leg of Ganymede in the Morgantina mosaic is retained. Lucas, who made the comparison between the Florence relief and the Tunisian mosaic, has linked them with painting.[69]

66. Lucas, *Neue Jahrbuecher*, IX, p. 431 n. 2; Georges Lafaye, *Inventaire des mosaïques de la Gaule, I, Narbonnaise et Aquitaine*, Paris, 1909, pp. 47-48, no. 209 (plate); Reinach, *Répertoire de peintures grecques et romaines*, p. 14, fig. 11; Sichtermann, p. 87, no. 191.

67. Vittorio Spinazzola, *Le Arti decorative in Pompei e nel Museo Nazionale di Napoli*, Milan, 1928, pl. 166; Sichtermann, p. 86, no. 175; Vittorio Spinazzola, *Pompei alla luce degli scavi nuovi di Via dell'Abondanza (Anni 1910-1923)*, Rome, 1953, fig. 605; Karl Schefold, *Die Waende Pompejis*, Berlin, 1957, p. 189. A possible comparative stucco relief is to be found in House I.16,4; Schefold, p. 23; Spinazzola, *Pompei alla luce . . .*, fig. 604, pl. 34. Two wall paintings, perhaps of our type, are reported by Schefold: House III.3,6, Schefold, p. 58; House VII.1,25, Schefold, p. 166. The latter painting is destroyed; see, however, A. Sagliano, *Le Pitture murali campane*, Naples, 1879, no. 87, and Sichtermann, p. 86, no. 174.

68. *Reale Galleria di Firenza*, Florence, 1817, Serie IV, II, pl. 101; Lucas, *Neue Jahrbuecher*, p. 431; Lucas, *Jahreshefte*, pp. 275-276, fig. 69; Salomon Reinach, *Répertoire de reliefs grecs et romaines*, Paris, 1912, III, p. 29, no. 1; Sichtermann, p. 89, no. 238.

69. Lucas, *Jahreshefte*, p. 276.

Of the greatest significance is a study of the relationship between our iconographical scheme and the representations of the same motif in the field of sculpture in the round. We should be reminded that Lucas saw a pictorial influence in mosaics, reliefs, and in certain statues.[70] His Group II lumps mosaic and statuary of both the abduction and apprehension types together. As the Morgantina mosaic shows, he saw the essential problem. Turning to sculpture, we find that a number of statues show a dependence on the pictorial development as reflected in the mosaics. The Ephesus group (Fig. 22),[71] and the Madrid group (Fig. 21),[72] are influenced by the first derivation seen in the third Tunisian mosaic (Fig. 13). Perhaps it is the pictorial nature of these two groups which demands that they be viewed frontally from a point slightly to the left of the center of the sculptural group to convey any meaning. The stance, composition, and foreshortening are only successful when seen at the same angle as the pictorial representation. A comparison with the Florence relief will make this clear.

The second group of clearly related sculpture centers around the famous Vatican group (Fig. 23),[73] which stands closest to the Vienne mosaic (Fig. 18) in development. The parallel group rises even faster in its course by the lifting of Ganymede's left arm and the turning of the eagle's head upwards. The chlamys now logically can frame the body and complete the upward flight. It is slightly smaller than the chlamys of the Vienne mosaic. The legs, which derive from a scheme similar to the Bignor type suggest it and the Vienne type as the prototype. This composition is also meant to be seen from one angle, as a glance at the side views seen in the plate number four of Sichtermann will show. With the Vatican group, the final line of development has been reached and a second abduction type has been fully achieved, a type which in spirit and composition is far removed from the original prototype as represented by the Morgantina mosaic. The Leochares attribution, which collapses if one assumes that his composition was a sculptural creation not dependent upon painting, has not been unanimously accepted by recent scholars. Miss Richter is bothered by the composition which she sees as occurring much later in the Hellenistic period, and Ashmole discards the group entirely. Sichtermann, as does Miss Bieber, accepts the attribution.[74] The Morgantina mosaic will perhaps resolve this part of the problem. With the connection of these statues to the mosaic development, there is little need to investigate the remaining Ganymede and eagle representations.[75]

An influence from painting has been postulated for much of the material previously discussed in this paper.[76] Through the iconographic study of the material dependent on the Morgantina mosaic, the pictorial rather than the sculptural nature of the Ganymede and eagle group can be affirmed. We may be assured that the Morgantina mosaic, dating from the third century B.C., stands very close to the prototype.

Although literary evidence is not plentiful concerning representations of Ganymede and the eagle, a well defined body of material does exist. Texts connected with this problem have been collected and discussed by Jahn, Overbeck, and Friedlaender.[77] The evidence, as one might

70. Lucas, *Neue Jahrbuecher*, p. 431; *Jahreshefte*, pp. 270-271.

71. Lucas, *Jahreshefte*, pp. 269ff., pl. 1; Sichtermann, p. 67, p. 90, no. 257, pl. 12.1.

72. Lucas, *Jahreshefte*, p. 273, fig. 68; Sichtermann, p. 89, no. 243.

73. Sichtermann, pp. 39ff., p. 81, no. 106, pls. 3, 4, 6.1.

74. Gisela M. A. Richter, *The Sculpture and Sculptors of the Greeks*, New Haven, 1950, pp. 285-286; Bernard Ashmole, "Demeter of Cnidus," *The Journal of Hellenic Studies*, LXXI, 1951, p. 19 n. 39. (Although Ashmole does not directly discredit this group, he implies such an action by his negative statement.) Margarete Bieber, *The Sculpture of the Hellenistic Age*, New York, 1955, pp. 62ff., fig. 198; Sichtermann, pp. 39ff.

75. The motif of Ganymede kissing the eagle seems to be a different tradition. The best example is the bronze mirror in Berlin; Adolf Furtwaengler, *Die Sammlung Sabouroff*, Berlin, 1883-1887, II, pl. 147; Sichtermann, p. 84, no. 140, pl. 7.3.

76. Lucas, *Jahreshefte*, pp. 269ff., postulated a common archetype for the Ephesus, Madrid, and Florence sculptures as well as the Tunisian, Bignor, and Baccano mosaics. Gaukler, *R.A.*, XXXI, 1897, postulated a famous but unknown prototype for the third Tunisian mosaic. Blake, p. 21, believes that all ancient great figure mosaics were copied from paintings and were not based on original designs. Sichtermann, pp. 88-90, catalogues mosaics, reliefs, gems, and sculpture under the heading *Ergreifung Ganymeds durch den Adler*.

77. Otto Jahn, "Ganymedes," *Archaeologische Beitraege*, Berlin, 1847, pp. 12-45; Johannes Overbeck, *Griechische Kunstmythologie*, Leipzig, 1871, II, pp. 515ff., especially, pp. 520, 530ff.; P. Friedlaender, "Ganymedes," in Pauly-Wis-

expect, has been slanted to the Ganymede of Leochares. We know that Ganymede and eagle representations did occur in painting. One of the earliest references occurs in Plautus, *Menaechmi*, ll. 142-144:

> Men. Tell me, have you ever seen a wall painting showing the eagle making off with Catameitus, or Venus with Adonis?
> Pen. Often. But what have such pictures got to do with me?
> (trans. Nixon in Loeb Library)

This passage does no more than establish that Ganymede paintings were well enough known to be part of the comic repertoire. However, a passage in Nonnos, *Dionysiaca*, xxv, vv. 429-438, has direct bearing on the Morgantina mosaic:

> The wellrounded shield had another beautiful scene amid the sparkling company of the stars, where the Trojan winepourer was cunningly depicted with art divine being carried into the court of Zeus. There well wrought was the Eagle, *just as we see in pictures*, on the wing, holding him fast in his predatory talons. Zeus appeared to be anxious as he flew through the air, holding the terrified boy with claws that tore not, gently moving the wings and sparing his strength, for he feared that Ganymede might slip and fall headlong from the sky, and the deadly surf of the sea might drown him.
> (trans. Rouse in Loeb Library)

The description of the rape of Ganymede by the eagle bears a striking resemblance to our mosaic. The eagle moves gently through the air, sparing his strength and holding the terrified Ganymede with claws that do not tear. All but one of these conditions apply directly to the Morgantina mosaic. The position of the claws of the eagle alone is unclear in our mosaic. Because of the position of the chlamys, it seems likely that Ganymede and not his cloak is clutched. The Baccano mosaic perhaps reflects the prototype in this detail. The problem of the eagle's claws, which do not tear, is of importance because any reference to this feature (for example, Straton of Sardes, *Anthologia Graeca*, xii, 221, and Martial, i, 6, or any work emphasizing the careful handling of Ganymede) has been referred to the statue of Leochares. The identification has been made on the strength of Pliny, *N.H.*, xxxiv, xix, 79, and Tatian, *Oratio ad Graecos*, 170A, chapter 56 (ed. Otto, Jena, 1851, p. 136). This uncritical approach is rather deceptive since one immediately sees, through the literary description of Nonnos and the representation of the Baccano mosaic, that the claw position can apply easily to a painting. Without the explicit *οἷα καὶ ἐν γραφίδεσσι* one could postulate a pictorial influence for the Nonnos passage, but with this clause one cannot deny the dependence of the literary passage on a painting, a painting closely reflected by the Morgantina Ganymede and eagle.

A short list of representations of the subject in minor arts is of interest even though they contribute little to our immediate problem. Vergil, *Aeneid*, v, vv. 250-257, describes a woven gown which has a scene of Ganymede and the eagle; Valerius Flaccus, *Argonautica*, ii, vv. 414-417, uses the same convention in describing a tunic. A golden libation cup described by Statius, *Thebais*, i, vv. 548-551, is yet another example. They only prove the popularity of earlier representations of the same subject.

The iconographic discussion here presented has proven that the Morgantina mosaic, a monument securely dated to the decade of 260-250 B.C., represents the painting prototype from which is derived a series of later material. The archetype could belong to an earlier part of the third century B.C. or even to the fourth century. The later representations and influences manifest in sculpture, mosaics, and literature were found to be dependent upon the undated archetype as represented by our mosaic. The artist responsible for this development naturally arouses our

sowa, *Real-Encyclopaedie*, vii 1, 1910, cols. 737-749. These works also contain references to representations of Ganymede and the eagle; these have not been included in the limited bibliography. Certain references can be found in Sichtermann.

imagination. It is unfortunate that we cannot attribute the archetype to one of the great painters who might have painted a Ganymede and eagle group. Petronius (*Satyricon*, 83) mentions such a painting:

> I came into a gallery hung with a wonderful collection of various pictures. I saw the works of Zeuxis not yet overcome by the defacement of time, and I studied with a certain terrified wonder the rough drawings of Protogenes, which rivalled the truth of Nature herself. But when I came to the work of Apelles the Greek which is called the One-legged, I positively worshipped it. For the outlines of his figures were defined with such subtle accuracy, that you would have declared that he had painted their souls as well.
>
> In one the eagle was carrying the Shepherd of Ida on high to heaven, and in another fair Hylas resisted a tormenting Naiad. Apollo passed judgement on his accursed hands, and adorned his unstrung lyre with the new-born flower.
>
> (trans. Heseltine in Loeb Library)

The evidence, though clearly for a master painter, is not enough to single out one man of the many who might have produced a Ganymede and eagle group capable of carrying the influence which our archetype must have had.

In conclusion, we have a group of third century B.C. mosaics which establish the Sicilian origin of the tessera technique. As has been shown, the Morgantina examples stand between the refined pebble pavements from Olynthus and Pella and the polished tessera mosaics of Alexandria, Pergamon, Delos, Palermo, and Malta. When the new invention spread from Sicily, by means of the Italian merchants, certain distinctive features such as the sectile bits and terra-cotta chips were continued. Eventually the Syracusan technique was to travel to Rome and Pompeii. The importance of the Morgantina mosaic also lies in the clarification it brings to the iconographical scheme of the pictorial representations of Ganymede and the eagle of Zeus. Although Zeuxis or Apelles cannot be identified as the master behind the extremely influential archetype, Leochares and a sculptural type can no longer be accepted as the basis for the numerous Ganymede representations. Through the iconographic study, we have proved the dependence of the sculptural type as preserved to us on an archetype in painting. We thus are entitled to consider the Morgantina mosaic as an important technical and artistic monument which will serve as a point of departure for further study of Hellenistic mosaics, painting, and sculpture.

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MILITARY ARCHITECTURE AND THE RADIAL CITY PLAN IN SIXTEENTH CENTURY ITALY

HORST DE LA CROIX

SINCE its inception around the middle of the fifteenth century, the radial city plan has proved itself to be a popular and pliant tool in the hands of urban planners, whether artists or engineers. While its origin remains conjectural, the radial plan appears to have passed through two distinct evolutionary phases during the first century of its life. The first of these lasted from the 1460's through the first third of the sixteenth century and saw Filarete's rudimentary conception rationalized and converted into practicable designs by Francesco di Giorgio. Subsequently, the plan's aesthetic potential was tentatively exploited by such artist-architects as Leonardo da Vinci,[1] Fra Giocondo (Fig. 1),[2] and Baldassare Peruzzi (Fig. 2),[3] to whom the radial scheme became the perfect vehicle for the expression of Renaissance urban ideals.

Except for a faint echo in the Vitruvius publications by Cesariano (Fig. 3) and Caporali (Fig. 4),[4] this first wave of interest in the aesthetic potentialities of the radial plan ended with Peruzzi. Succeeding generations of artist-architects were no longer attracted to the radial scheme and the most significant urban theoreticians of the later sixteenth century, like Pietro Cataneo and Vincenzo Scamozzi, found the checkerboard plan more to their liking. The idea of the radial plan was revived around the middle of the century, but this time by a different group, the military architects. They also took their departure from Francesco di Giorgio's plans and theories but as they were more concerned with practical than aesthetic considerations, their results differed

1. Most of Leonardo's urban designs are based on the rectangular or gridiron system. But two drawings in the Codex Atlanticus appear to be schemes for the enlargement of the city of Milan in the radial manner (cf. Leonardo da Vinci, *Il Codice Atlantico*, facs. ed. Ulrico Hoepli, Milan, 1894-1903, fols. 65^{v} and 73^{v}). These two sketches seem to have escaped the attention of modern scholars, although they appear to be most eloquent expressions of Renaissance urbanism. What should increase interest in these designs is the fact that later plans of Milan indicate that an eventual extension of the city was actually carried out much in the manner that had been suggested by Leonardo (cf. F. R. Hiorns, *Town Planning in History*, London, 1956, plan on p. 95).

2. The drawing comes from volume "B" of three volumes of drawings which have been attributed to Fra Giocondo by H. von Geymueller ("Trois volumes de dessins de Fra Giocondo," *Mélanges de l'École française de Rome*, XI, pp. 133f.). P. Lavedan (*Histoire de l'Urbanisme*, Paris, 1941, II, p. 23, hereafter cited as *Urbanisme*) accepts the attribution without comment, while A. E. Brinckmann (*Stadtbaukunst*, Berlin, 1920, p. 65) questions it. It appears that the drawing is a composite, derived from two sources, and that it was made in northern Europe. The central temple could well be by Fra Giocondo, as it corresponds to similar drawings of his in the Uffizi. The town that surrounds this temple, however, is not only shown in a different perspective but contains houses of northern type. While this would not preclude Fra Giocondo's authorship, the mediaeval fortifications on the design certainly do. Drawings attributed to Fra Giocondo in the Uffizi (Dis. Arch. 1691 and 1693) show that he copied and experimented with Francesco di Giorgio's fortification types. It would seem difficult to associate the archaic fortifications on this drawing with Fra Giocondo, the man who is said to have fortified Treviso and Padua with bastions (cf. Willich in Thieme-Becker, *Kuenstler-Lexikon*, XIV, pp. 64-68). I submit, as a guess, that the drawing may have been done by one of Fra Giocondo's students in France. If so, it would still reflect the friar's approach to urban planning.

3. The angry penstroke across the face of the unfinished plan indicates that Peruzzi was dissatisfied with his design. His idea to combine radial with rectangular features was revived several decades later by G. Vasari il Giovane who drew a methodically refined version of Peruzzi's miscarriage in 1598 (Uffizi, Dis. Arch. 4530).

4. Cesare Cesariano (*Di Lucio Vitruvio Pollione de architettura libri dece*, Como, 1521, fol. 26^{v}) presents a plan on which he reconstructs the Vitruvian city according to the radial principle. However, it seems quite possible that this interpretation may never have occurred to him, had he not known earlier radial plans by members of the Bramante circle. Since Cesariano spent most of his life in Milan, he probably also knew Filarete's *Trattato*. G. B. Caporali (*Vetruvio in volgar lingua*, Perugia, 1536, fol. 43^{r}) repeats Cesariano's illustration, for which he seems to have used the identical plate. To this he added a cleaned-up version on which Cesariano's narrow and crooked streets have been widened, straightened and regularized. These are the only two radial interpretations of the Vitruvian city which have come to my attention. Fra Giocondo (1513), Durantino (1524), Philandri (1552), and Barbaro (1556), all interpreted the Vitruvian text in the traditional gridiron manner.

strikingly from those of the earlier planners. This second phase of the radial plan's evolution does not seem to have received the attention it deserves from modern scholars.

The apparent reluctance of art historians to deal with the subject of military architecture appears to be due to the fact that today all military endeavors tend to be classified among the sciences rather than the arts. It should be remembered, however, that the Renaissance did not recognize so strict a separation of concepts and that, at that time, the terms "art" and "science" were practically interchangeable. The installation of a siege battery was referred to as an art, just as the building of a church or palazzo. It was a time when the greatest artists also were the first scientists and when many significant military inventions were made by men like Francesco di Giorgio, Leonardo da Vinci, and by members of the Bramante circle. Only toward the middle of the sixteenth century did indications appear of a breakup in the field of human knowledge and a segmentation of its rapidly growing bulk into a number of separate departments. In the field of architecture, this trend was expressed by the emergence of military engineering as a profession distinct from that of civilian architecture. This split was an early symptom of the rush toward specialization which, accelerating through four centuries, has become a dominant feature of our contemporary civilization. The source of this technological diversification should be of interest not only to the historian of science, but also to the art historian.

While of basic significance, the problem referred to above is dealt with only superficially in this paper, which is concerned with an appraisal of the sixteenth century radial city plan from a new point of view. Due to the art historian's lack of interest in military architecture, a misevaluation of this type of plan is perpetuating itself in modern literature. Most frequently it is dismissed with casual references to its geometric artificiality and its decorative qualities.[5] It is my purpose here to subject this small but interesting episode in the history of urban planning to a more detailed study than it has been accorded and to bring this segment into a more adequate focus in the context of the huge historical field.

The Development of Firearms and Its Effect on Fortification[6]

Of basic and obvious significance for the further development of the radial city plan, and influential for all city planning during the sixteenth century, was the improvement of firearms and the growing power and efficiency of siege artillery.[7] The invention of the gun probably occurred around the year 1300 and one of its earliest authenticated uses in Europe took place in 1331, when the German Barons von Kreuzberg and von Spielemberg attacked Cividale in Friulia.[8] A few years later, in 1340, the Papal forces used firearms at the siege of Terni.

5. S. Lang ("The Ideal City from Plato to Howard," *Architectural Review*, CXII, 668, August 1952) summarizes this point of view when she refers to practically all of the 16th century's radial plans as "geometrical exercises in pattern making."

6. The basic reference work for all those interested in the history of warfare and military sciences is still Max Jaehns, *Geschichte der Kriegswissenschaften*, Munich, 1889, a monumental, critically annotated bibliography of military literature from Greek to modern times. While emphasizing the German contribution (not entirely without bias), this work is the military equivalent to Schlosser's *La letteratura artistica*. Valuable also is H. Delbrueck, *Geschichte der Kriegskunst*, Berlin, 1920. More specifically concerned with military architecture are E. Rocchi, *Le fonti storichi dell'architettura militare*, Rome, 1908; L. A. Maggiorotti, *Architetti e architettura militari*, Rome, 1935. For this paper, extensive use has also been made of Carlo Promis' devoted compilation of biographies of Italian military architects, which appeared intermittently in *Miscellanea di storia italiana* between the years 1862 and 1874 (hereafter cited as *M.s.i.*).

7. The composition of gunpowder may have been known in the Occident as early as the 8th century. The first authentic recipe appears in a mid 13th century Latin manuscript which exists in several copies and which is believed to be a translation of an original Greek work by Marcus Graecus of the 8th century (cf. Jaehns, *op.cit.*, I, pp. 156f.). Directly or indirectly, both Albertus Magnus (1193-1280) and Roger Bacon (1214-1294) are believed to have depended upon this manuscript. But none of these early authors mentions that this powder was being used for "shooting," so that the invention of the gun must fall somewhat later, probably around 1300. Several preparatory steps were necessary before a workable gun could be developed: a) the purification of saltpeter to free it from moisture-attracting substances; b) the construction of a sufficiently strong barrel with a touchhole; c) the invention of an effective method of loading which prevented the leakage of explosive gases past the ill-fitting cannon balls. This last defect was remedied by the insertion of a close-fitting wooden plug between ball and powder charge (cf. Delbrueck, *op.cit.*, IV, pp. 29ff.).

8. The initial introduction of cannon at the battle of Crécy in 1346 is a fable, according to Delbrueck (*loc.cit.*), who believes that cannon were first used in Italy. This country had

Once introduced into warfare, firearms underwent a fairly rapid development, which at first was directed toward increasing the size of the new weapons. By 1370, huge bombards weighing several thousand pounds were manufactured in Italy, designed to breach walls by hurling tremendous stone balls against them. But even the largest of these early guns were relatively ineffective and two basic improvements had to be made before they could become efficient siege weapons. The first of these was the development of a useful and practical carriage to give mobility to these iron monsters, but even more important, stone missiles had to be replaced by iron cannon balls.[9]

Until the end of the fifteenth century, stone balls were used predominantly by siege artillerists, but even if reinforced with crossed iron bands, these stone missiles remained relatively ineffective, as they were fragile and tended to shatter upon impact. Thus the effectiveness of the early siege guns did not surpass greatly that of older hurling mechanisms, like the catapult and ballista. The first use of iron cannon balls on a large scale occurred during the French expedition into Italy under Charles VIII in 1494. The effectiveness of French artillery on this occasion was such that it rendered existing fortification methods obsolete almost overnight. The iron cannon ball permitted not only a great reduction in the bulk of ordnance, resulting in vastly superior mobility, but its power was so devastating that it could reduce even the best and strongest mediaeval walls within a matter of hours. Citadels which were expected to hold out for months were reduced within a day or two, so that finally, in view of the almost irresistible power of French artillery, many Neapolitan garrisons surrendered at the mere threat of a bombardment.[10]

Although the very first use of firearms may have occurred on Italian soil, Italy subsequently neglected this weapon and fell behind northern Europe in its development. This curious apathy toward firearms during most of the fifteenth century is reflected in the lack of an independent Italian literature on the subject. The painful lesson of 1494, however, caused a sudden awakening of Italian interest in the new weapon. Beginning with Francesco di Giorgio, not only military men, but artists, mathematicians, and humanistic scholars occupied themselves with the problem of artillery. The result was that, during the first third of the sixteenth century, Italy not only caught up with but gained a theoretical and scientific advantage over the northern countries. The work of the Sienese Vannuccio Biringucci was basic for the metallurgical knowledge of the time and remained influential down to the seventeenth century.[11] Of equal importance and impact was the work of the Brescian mathematician Niccolo Tartaglia, who was the first to concern himself with the problems of elevation and trajectory and who is often referred to as the "Father of Ballistics."[12] Curiously, neither Machiavelli nor Guicciardini seemed to have much respect for the new weapon, and the former even saw fit to ridicule firearms, conceding only that they had the moral advantage of the fear which they inspired.[13] And as far as hand weapons were concerned, they probably were justified in claiming that their effect was overestimated, for the development of portable firearms was particularly slow. As late as 1559, a French writer recommended the

commercial connections with both Spain and the Near East, where possible forerunners of the cannon were used in the form of the Arabian *madfaa* and the Byzantine "fire-box." Delbrueck admits, however, that the earliest graphic representation of a cannon may be the one that appears in an Oxford manuscript, *De Oficiis Regnum*, written ca. 1325 by Walter de Millemette.

9. Iron cannon balls began to make their appearance around the middle of the 15th century. But they were used rather sparingly at first, apparently because of casting difficulties (cf. Jaehns, *op.cit.*, I, p. 405; Delbrueck, *op.cit.*, IV, pp. 42f.).

10. Delbrueck, *loc.cit.*, also F. L. Taylor, *The Art of War in Italy, 1494-1529*, Cambridge, 1921. Other innovations introduced by the French on this occasion included the mounting of guns on permanent carriages and the use of horses, instead of oxen, as draught animals.

11. Vannuccio Biringucci, *Pirotecnica o sia dell'arte della fusione o getto de' metalli*, Venice, 1540. Later editions in 1550, 1558, 1588, and 1678; French translation by J. Vincent, Paris, 1556; Latin translations appeared in Paris, 1572, and Cologne, 1658. Despite its many editions, the work is rare (cf. Jaehns, *op.cit.*, I, pp. 591f.).

12. Niccolo Tartaglia, *La nova scientia*, Venice, 1537; *Quesiti et inventioni diverse*, Venice, 1538 and 1546. Tartaglia's "firsts" include the discovery that a cannon ball's line of flight is a curve, that the greatest range is obtained with an elevation of 45 degrees, and his classification of artillery pieces according to the diameter and weight of the shot fired, i.e. their caliber. His books went through numerous Italian editions and were translated into English, French and German (cf. Jaehns, *op.cit.*, I, pp. 596f.).

13. Niccolo Machiavelli, *I sette libri dell'arte della guerra*, Florence, 1521, books 2 and 3.

reintroduction of the crossbow as the basic infantry weapon and, in 1590, a crossbow-versus-arquebuse controversy raged in England.[14] Furthermore, the effect of artillery in field battles was inconsequential as, through most of the sixteenth century, accuracy was too poor and the loading too slow to permit it to cope with the flux of moving battles.[15] In siege warfare, however, the cannon had become a devastating weapon by the end of the fifteenth century, and it was duly recognized as such by all military architects of the following century, most of whom not only included at least one chapter on artillery in their treatises on fortification, but many of whom actually were practiced gunners themselves.

During the Middle Ages, defensive methods had triumphed over offensive weapons. Fortresses were able to withstand the most powerful weapons known at the time and, in many instances, costly and time-consuming blockades were the only effective means of forcing a stronghold to surrender. With the growing power of artillery the advantage shifted back to the besieging forces. By the end of the fifteenth century, the attacker's weapons had become so overwhelming that only a complete change in the methods of fortification could offer the defenders any hope of successful resistance. As might be expected, the first steps toward a modernization of defenses were taken in northern Europe, where they were the natural by-products of the advances made in the design of artillery. Fifteenth century Italy lagged behind the North not only in its appreciation of the potential of artillery, but also in matters of fortification. Italy, however, quickly assimilated the lesson taught by the French campaign of 1494 and, within a few decades, it had outstripped its teachers to the point where the "Italian method" of fortification had become the admired standard for all Europe. By the middle of the following century, the Italian military architect had become a most sought-after individual, and potentates from France to Poland, from Denmark to Hungary were eagerly bidding for his services.

Stated in its simplest terms, the problem which confronted the defenders at the turn of the century was this: no existing masonry walls, no matter how well or how strongly built, were able to withstand the shattering power of modern artillery. Even a strengthening of the walls by building them thicker and by reinforcing them with earth-works could only delay, not prevent, their being breached. And so, military architects began to concentrate on ways and means of protecting the inevitable breach. Two methods were found to be effective. One of these consisted in backing the threatened part of the wall with a high earthen rampart (*retirata*) which served as a secondary wall and as a platform for artillery firing frontally and point-blank through the breach. But more effective was the flanking fire close to and parallel with the outside of the walls. If artillery were placed on platforms projecting from the walls, any breach between two neighboring platforms could be sealed off effectively from the outside by decimating the assaulting enemy forces with enfilading fire before they reached the breach proper. This latter discovery led to the development of the bastionated defensive rings which were to become the standard system of fortification down to the nineteenth century.

Towers which projected from fortress walls had been built throughout the Middle Ages and had been recommended as early as Vitruvius.[16] Thus, Renaissance planners merely had to adapt an age-old principle to the greater range and power of the cannon, but the most practical shape and size of these projecting, cannon-bearing towers and the ideal distance from one to the other became subjects of long and varied experimentation. During the late fifteenth and early sixteenth centuries, round towers were in wide use, as they were believed to offer the strongest

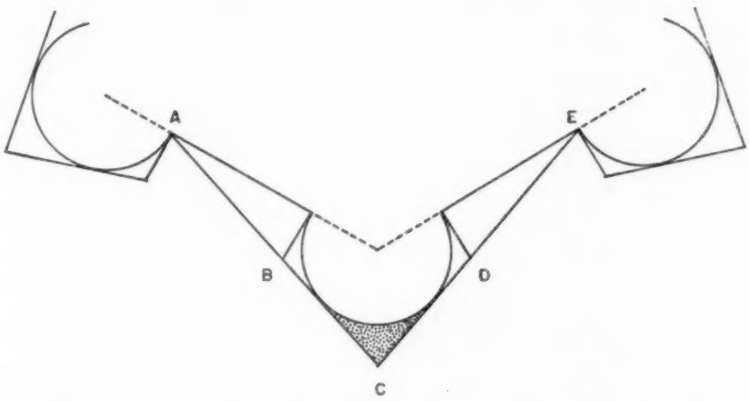
14. Delbrueck, *op.cit.*, IV, pp. 52f. Slowness of loading and the problem of keeping powder and matchcord dry in rainy weather were the main difficulties with which the early arquebusier had to cope. While the practiced English bowman could send off 12 arrows a minute, the early arquebusier may have required up to 15 minutes for each shot (cf. Jaehns, *op.cit.*, I, p. 417).

15. For the employment of artillery in field battles in the early 16th century, see Taylor, *op.cit.*, pp. 103ff.

16. Cf. Vitruvius, 1.5, where he prescribes not only that the towers should project from the walls, but also that they be placed at one arrow shot's distance from each other, so that an enemy attacking any part of the wall between them could be harassed from both sides.

resistance to enemy fire. It was argued that the round shape was inherently the strongest and that cannon balls tended to glance off rather than shatter its rounded surfaces. Since horizontal fire was the most effective, these towers could be lowered so that their batteries would be installed at a height that was somewhat below the top of the adjoining curtain. Thus, they ceased to be towers and became bastions.

Despite their greater structural strength, however, round bastions suffered from a number of disadvantages. One of these was the dead angle at their immediate fronts which could not be protected by flanking fire from adjacent bastions. This defect is graphically illustrated by Gabrio Busca with a drawing in which he criticizes Dürer's system of fortification (text fig. A).[17] Even more damaging, perhaps, was the limitation that the round platform imposed upon the defenders' potential fire power. Only one, at most two, cannon could be placed in such a position as to enable it to sweep the surface of the adjacent curtain. Also, cannon placed radially around a circular perimeter produced scattered fire, and no more than two or three guns could be brought to bear on any given point on the plain before them.[18]



A. Round and triangular bastions compared (after G. Busca, *Della architettura militare*, Venice, 1601, ch. 34, p. 126, fig. 3).
The shaded area at C cannot be adequately defended by flanks at A and E.

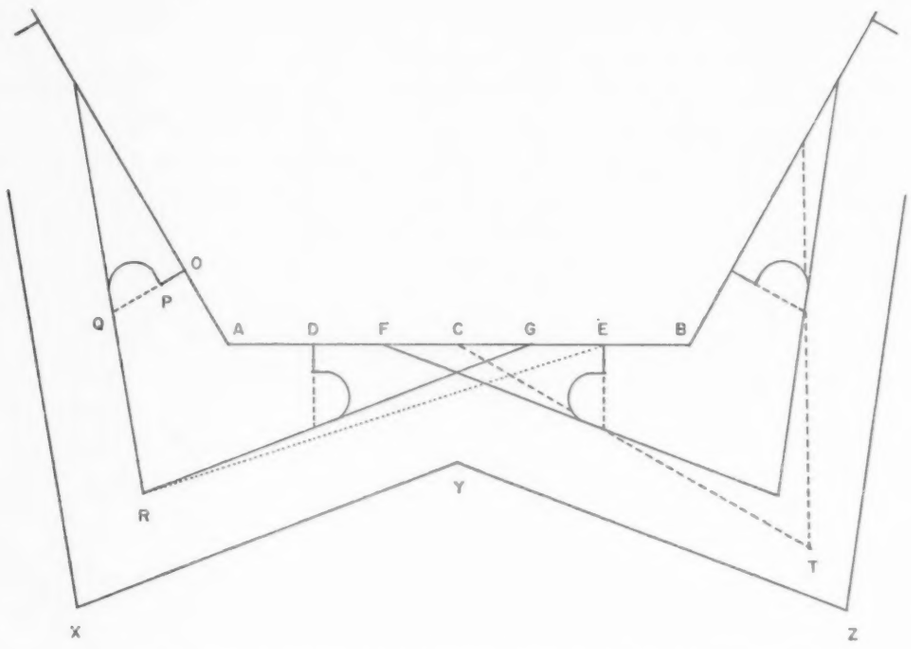
Most of these difficulties were solved when military architects finally adopted the triangle as the basic shape of their bastions. The triangular head of the bastion was connected with the curtain by means of two short wall sections. The platform between these two parallel wings permitted the installation of up to four guns at each flank. At the same time, the slanting surfaces of the angular front could be fully protected by fire from neighboring flanks, as well as from parts of the curtain (text fig. B). These flanking batteries became the most important and sensitive feature of the new system of fortification. Their protection against enemy fire was a major concern of military architects and gradually led to the evolution of the projecting bastion shoulders ("orecchione") and the typical arrowhead plan of the sixteenth century bastion. Responsibility for the invention of the triangular bastion has been the subject of much speculation. Vasari gave the credit to Sanmicheli, while Carlo Promis believed that Francesco di Giorgio was the first to design,

17. Gabriello Busca, *Della architettura militare*, Milan, 1601, chap. 34. Gabriello (Gabrio, Gabriele) Busca (ca. 1540-1605) was born in Milan. Bronze caster, artillerist, ordnance officer, and military engineer, he worked most of his life in northern Italy, part of the time in Spanish service (cf. Promis, *M.s.i.*, XII, 1871, pp. 522-553). Busca's treatise is dedicated to G. F. de Velasco, Spanish Governor of Milan. At the end of the work (p. 287), Busca promised two more volumes, but since neither of these is known to exist either in print or manuscript, it is assumed that Busca died shortly after the publication of the first volume.

The published volume is a methodical, well-ordered, and clearly written work by one of the keenest theoretical students of the art of fortification of his time. Busca was acquainted with practically all earlier works on military architecture, and discusses them intelligently and without the malice born of professional jealousy which one encounters so often in similar works. Interesting is Busca's high esteem of Dürer, to whom he refers frequently (chs. 34, 48, 57, 82, 85) and whom he considered to be the first theoretician on matters of fortification.

18. Busca, *op.cit.*, ch. 34.

if not actually build one.[19] However, the modern consensus is that no one man was responsible for the invention, but that it was the product of a gradual evolution.



B. Construction of bastions for a hexagon (after B. Lorini, *Le fortificationi di B.L.*, Venice, 1609, I, ch. 3, fig. on p. 14).

Lorini recommends that a bastion be drawn from a point ¾ of the curtain length removed from its flank. A bastion drawn from center curtain (C) would permit installation of additional guns between C and F for its protection, but the angle at T would become too acute.

AB—side of basic hexagon
DE—curtain
FE—¾ of curtain
ER—"length of defenses"
XYZ—counterscarp
QR—face of bastion
OQ—side of bastion
OP—flank (1/3 of OQ)
PQ—baseline of *orecchione*

Francesco di Giorgio Martini[20]

Neither Filarete nor Alberti had made any significant contribution to the new science of military architecture. While both dealt with the problem of fortification in their writings, they still tried to solve it in the orthodox manner of the Middle Ages; and their conventional approach has

19. G. Vasari, *Le vite de' più eccellenti pittori, scultori, ed architettori*, ed. Milanesi, Florence, 1878 (hereafter cited as *Le vite*), VI, Vita di Sanmicheli, p. 352, for the reference to Sanmicheli as the inventor of the triangular bastion. C. Promis (*Trattato di architettura civile e militare di Francesco di Giorgio Martini*, ed. Promis-Saluzzo, Turin, 1841, II, Memorie storiche, IV) attempts to prove that Francesco di Giorgio was the original inventor of the triangular bastion, basing his argument primarily on the fortification designs in Francesco's *Trattato* rather than his actual constructions. In the Gabinetto delle Stampe of the Uffizi Galleries in Florence, there exists a drawing attributed to Francesco di Giorgio which apparently was not known to Promis, but which seems to illustrate his points better than any of the designs cited by him. Dis. Arch. 336-a shows the plan of a fortified rectangular palazzo with fully developed triangular bastions at each of its four corners (Fig. 5). These bastions are complete, down to the round *orecchione* that protect their flanks. Although only a rough sketch, lines drawn from the bastion faces to the flanks of neighboring bastions make the designer's intention unmistakable. These bastion faces are to be protected by fire from the adjacent flanks, and the design leaves little to be added by later military architects. While undoubtedly a study for close-range fire of hand weapons, this drawing fully expresses the basic theory of bastionated defenses in its essence and, if the drawing is indeed by Francesco di Giorgio, it may well be the very earliest plan of a triangular bastion.

20. For Francesco di Giorgio's life and works, see: Vasari, *Le vite*, III, pp. 69ff.; A. Venturi, *Storia dell'arte italiana*, Milan, 1901-1938 (henceforth cited as *Storia*), VIII, pp. 737-883; Carlo Promis, *op.cit.*, I, Vita di Francesco di Giorgio; E. Rocchi, *Francesco di Giorgio nelle tradizioni dell'ingegneria militare italiana*, Siena, 1902; A. Weller, *Francesco di Giorgio, 1439-1501*, Chicago, 1943; R. Papini, *Francesco di Giorgio architetto*, Florence, 1946; M. Salmi, *Disegni di Francesco di Ciorgio nella collezione Chigi Saracini*, Siena, 1947; H. Millon, "The Architectural Theory of Francesco di Giorgio," ART BULLETIN, XL, 1958, pp. 257ff.

been mildly criticized by some modern authors.[21] It should be recognized, however, that at their time the cannon had not yet become the formidable weapon which, a few decades later, was to force military architecture to undergo a general transformation. As pointed out above, Italy did not awaken from its lethargy in military matters until the last decade of the fifteenth century, or, to be more specific, until the French invasion of 1494 suddenly rendered all existing methods of fortification obsolete. It can hardly be considered a coincidence that Francesco di Giorgio, who was at Naples when that town was besieged by Charles VIII, was one of the first to make a determined effort to find an answer to the problems posed by the overwhelming power of modern siege artillery.

Francesco di Giorgio presents his theories on fortification in Book 5 of his *Trattato*.[22] After introductory chapters on artillery and gunpowder, he begins the third chapter with the significant statement that the "ancients did not know our artillery." The implication is that, in this respect at least, nothing can be learned from the study of classical authors. This is a radical departure from earlier treatises and from Francesco's own preceding books in which he frequently leans on the authority of classical writers. In Chapter 4, he enumerates the main features of his ideal fortress. He heads the chapter with the revolutionary statement that "the strength of a fortress depends upon the quality of its plan rather than the thickness of its walls." This realization that the effects of artillery bombardment could not be counteracted by simply increasing the thickness of fortress walls was of fundamental importance. It put an end to past efforts and reoriented military architecture toward new and more promising lines of research. Among the recommendations made in Chapter 4 are many which forecast later developments. In Paragraph 8, Francesco states that fortress walls should be "high in themselves, but situated in a low place." This means, undoubtedly, that the silhouette of a fortress should be low and that its walls should rise from the bottom of a deep and wide ditch, such as shown on most of Francesco's perspective designs of fortifications. In Paragraph 9, he stresses the importance of flanking fire, although, at this point, he still seems to be thinking in terms of round bastion heads. He writes that the ancients approved of round towers as well as round wall circuits. While he agrees that round towers are stronger than square or polygonal ones, Francesco emphasizes that the wall-stretches between these towers should always be straight, so that two neighboring towers are always in full sight of each other. As for the basic shape of a fortress, he believes that the rhomboid is best, but that squares and regular polygons will also serve. And, in Paragraph 16, Francesco voices one of the most fundamental concepts of later planning, namely, that "the larger the circumference of a fortress, the more angles does its shape require." He does not particularly stress this point, but the implication is clear: the design of a fort's defensive belt must be adjusted to the range of contemporary artillery. Short and concise, without going to the lengths

21. Cf. Lavedan, *Urbanisme*, II, p. 10; J. Siedler, "Der Staedtebau und die Renaissance in Italien und Deutschland," *Zeitschrift für Bauwesen*, 10/12, 1920, col. 604; W. A. Eden, "Studies in Urban Theory: The 'De re aedificatoria' of Leon Battista Alberti," *The Town Planning Review*, XIX, 1943, p. 17. Historians of military architecture, like Marini, Promis, and Rocchi, generally share this opinion. G. Muenter ("Geschichte der Idealstadt," *Staedtebau*, XXIV, 1929, p. 254), on the other hand, concedes that the star-shape for Filarete's "Sforzinda" may have been chosen for military reasons and, indirectly, brings it into context with the evolution of the triangular bastion. It should be pointed out, perhaps, that plan and elevation reveal two different aspects of a structure and that either one could be progressive while the other remains archaic. In "Sforzinda's" case, Filarete seems to have combined mediaeval elevations with a fortification plan that pointed well into the future.

22. The treatise exists in several manuscript copies, of which the one in the Magliabecchiana collection in Florence was published by Cesare Saluzzo and Carlo Promis as: *Trattato di architettura civile e militare di Francesco di Giorgio Martini*, Turin, 1841. The dating of the *Trattato* is uncertain. Promis (*op.cit.*, I, pp. 116-119) dates it around 1500. Weller (*op.cit.*, p. 268) writes that the treatise is usually assumed to have been written before 1482, because of references to Federigo di Montefeltro, who died in that year. Weller adds, however, that much of the material on military architecture must be dated after 1495, as it presupposes Francesco's Neapolitan experiences. C. von Fabriczy ("Toskanische Kuenstler in Neapel," *Repertorium für Kunstwissenschaft*, XX, 1897, p. 104) cites a document (Doc. VIII) which is dated 1492 and according to which Fra Giocondo had drawn 126 illustrations for Francesco's *Trattato*. This same document is interpreted by Venturi (*Storia*, XI, pt. 1, p. 692) as meaning that one Antonello de Capua made copies of figures from Francesco's treatise for Fra Giocondo. In either case, the document seems to indicate that the bulk of Francesco di Giorgio's *Trattato* was completed by 1492.

of most later writers on fortification, Francesco states practically all of the major problems that confronted the military architect at the turn of the century. And he presents solutions for these difficulties which, while lacking the finesse of later applications, were to become the guiding principles of sixteenth century military architecture.

As far as military architecture is concerned, the importance of Francesco di Giorgio's *Trattato* can hardly be overestimated. Although some modern writers seem to doubt that the work was known among Francesco's contemporaries,[23] there is much evidence which contradicts such an opinion. There can be little doubt, for instance, that Antonio da Sangallo the Younger was well acquainted with the work. His Uffizi drawings of harbor cities so closely resemble Francesco's illustrations that he could have drawn them only with the *Trattato* at his elbow (Figs. 6-8, 10).[24] Pietro Cataneo, who was himself the author of an influential treatise on architecture, made literally dozens of copies after figures from Francesco's work.[25] Then there are Fra Giocondo's well-known copies in the Uffizi Galleries.[26] Several of Leonardo's drawings in the Codex Atlanticus reflect Francesco's influence which, in this case, may be traceable to the two artists' personal contacts in Milan in 1490.[27] Finally, copies of Francesco's treatise are said to have been owned by Daniele Barbaro and Vincenzo Scamozzi, indicating that interest in the work extended well into the seventeenth century.[28]

While one may thus be tempted to call Francesco di Giorgio the "Father of Military Architecture," one might be even more justified in ascribing to him the paternity of the radial city plan. Despite claims of precedence which have been made for Filarete, the fact remains that Francesco was the first who actually designed a radial city plan. While Filarete describes in his *Trattato* a city plan which must perforce be interpreted as radial, he was unable to represent his mental concept in graphic terms.[29] His dilemma seems to be clearly expressed by the "Sforzinda" plan, which he presents as his finished product to the reader and which shows only the wall circuit, a circular ring street and the central complex of piazze, but with the radial streets omitted (Fig. 9).[30] By working with traditional rectangular units in the center of his plan, he has created a core which, apparently, he has been unable to integrate with the envisioned radial street network.

The problem that Filarete created was solved about a decade later by Francesco di Giorgio. In order to arrive at a solution, Francesco had to make a radical departure from classical or

23. Lavedan (*Urbanisme*, II, p. 14) writes: "Ses [Francesco's] contemporains ne l'ont pas lu; . . ."

24. Compare Uffizi Dis. Arch. 1302, recto and verso (Figs. 6 and 7), attributed to Antonio da Sangallo the Younger, with the illustrations on folio 86, recto and verso (Figs. 8 and 10), of Francesco di Giorgio's Codex Magliabecchianus. While there is some intermingling of Francesco's elements on Antonio's drawings, which are also rendered in more consistent perspective, there is hardly a single feature of these Uffizi drawings which cannot be found also on Francesco's illustrations.

25. A bound volume of Pietro Cataneo drawings at the Uffizi (Dis. Arch. 3275-3381) contains, among other ornamental and architectural drawings, over 40 designs of fortifications which are directly copied from Francesco's *Trattato*.

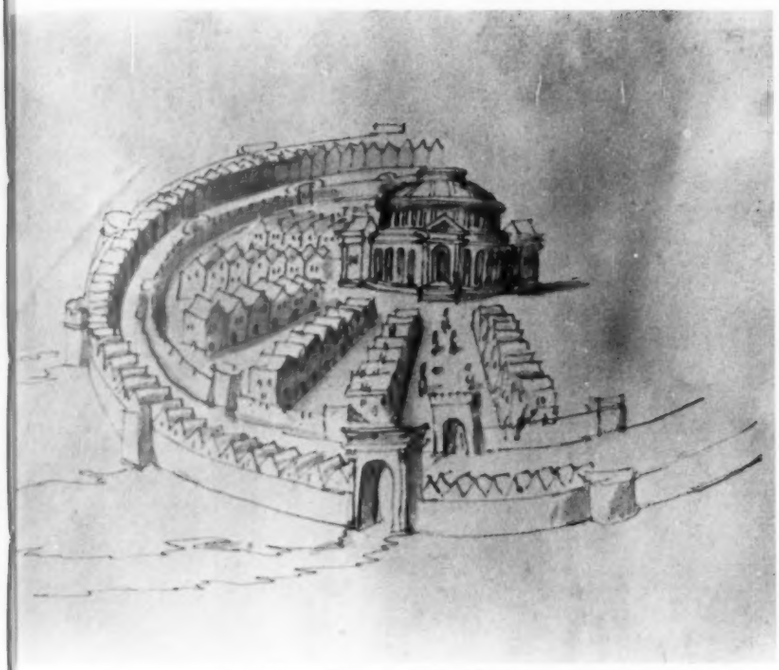
26. Uffizi Dis. Arch. 1690, 1691, 1693, 1694, all bear designs that have been copied from Francesco's *Trattato*. They have been attributed to Fra Giocondo by H. von Geymueller, *Cento disegni di architettura di Fra Giovanni Giocondo*, Florence, 1882, pp. 19ff. Also cf. note 22 above.

27. While not direct copies, the following Leonardo designs of fortifications in the Codex Atlanticus are unmistakably Giorgiesque in both character and method of representation: fols. 41^{v-b}; 43^{r-a}, b; 43^{v-b}. In addition, a number of small scattered plans of citadels shows Leonardo experimenting with the rhomboid shape which Francesco described as the ideal form of a fortress (cf. Hoepli facs. ed. of *Il Codice Atlantico*).

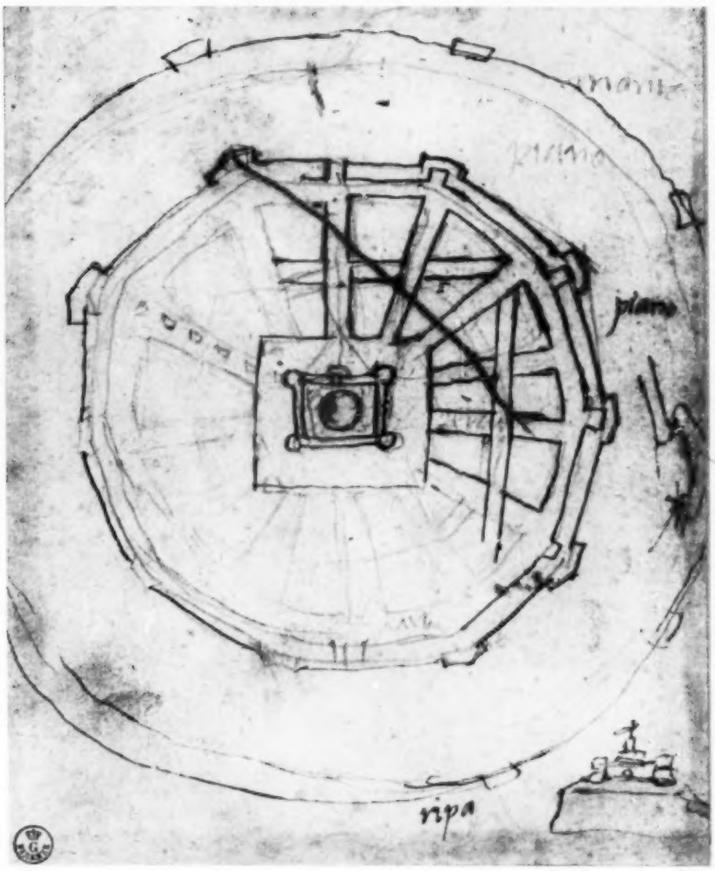
28. Cf. C. Promis, *Trattato . . . di Francesco di Giorgio Martini*, I, p. 118.

29. Filarete's references to the street plan of "Sforzinda" are few. They are to be found on fols. 13^{v}, 42^{v}, and 43^{v} of his *Trattato dell'architettura* (Codex Magliabecchianus, II, I, 140, National Library, Florence; this Codex has been partially transcribed and translated into German by W. von Oettingen, *Antonio Averlino Filaretes Tractat ueber die Baukunst*, Vienna, 1890, who transcribed about 80 of the 192 folios. A later *Trattato* edition was partially completed by Emil Kauffman at his death in 1956. His manuscripts and microfilms of the Codex are in the Avery Library). The discrepancy between text and illustration has been noticed by most authors who have dealt with "Sforzinda" (cf. Siedler, *op.cit.*, col. 603; Muenter, *op.cit.*, p. 252; Lavedan, *Urbanisme*, II, p. 13), but none of them has drawn what seems to be the most obvious conclusion, i.e. that the radial interior plan was the accidental result of Filarete's choice of a star-shaped circumference and his decision to have eight gates, instead of only four, which he wanted to connect with the central piazza by means of straight streets.

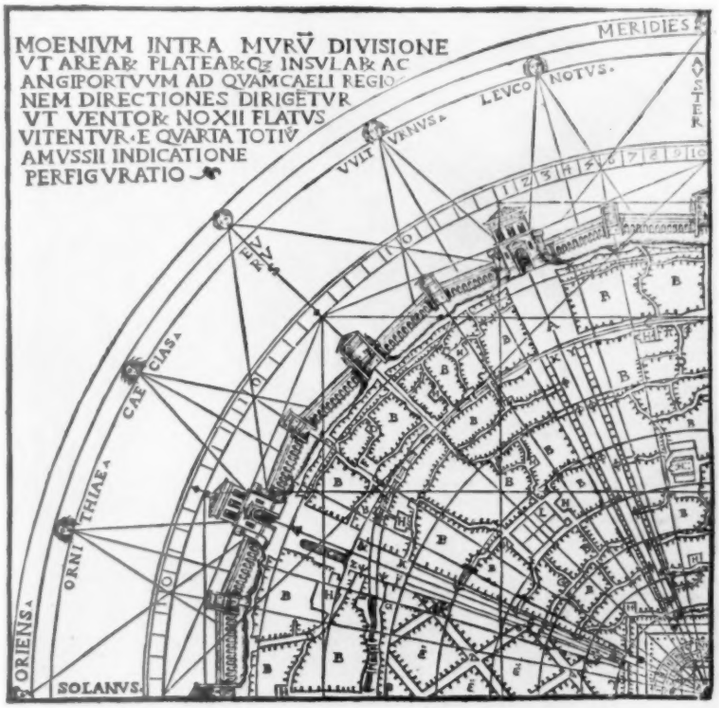
30. On the original drawing in the Codex Magliabecchianus (f. 43^{r}), thin silverpoint lines are recognizable which lead from the gates and the starpoints to the center of the design.



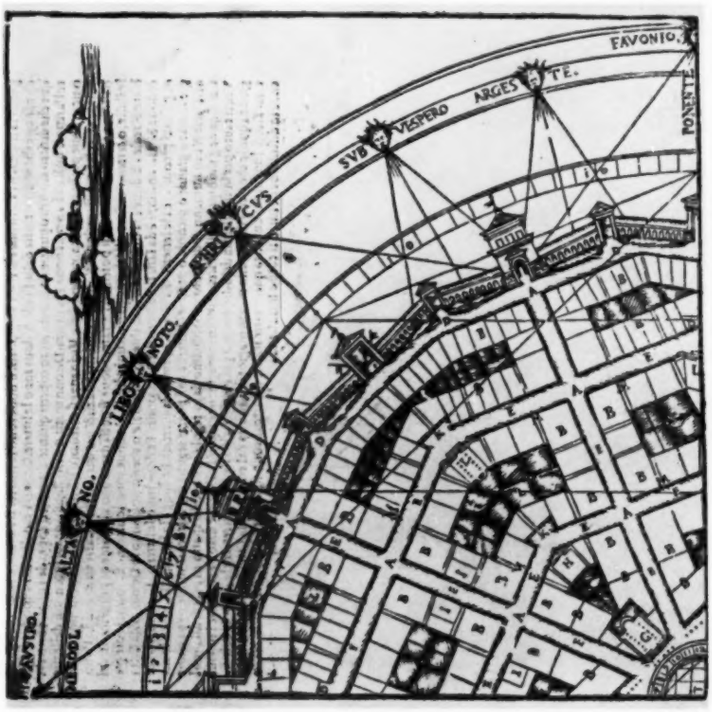
1. Anonymous Destailleur (Fra Giocondo?), Perspective view of a radial city, from Album "B," fol. 122, lost (photo: Deutsches Archeologisches Institut, Rome)



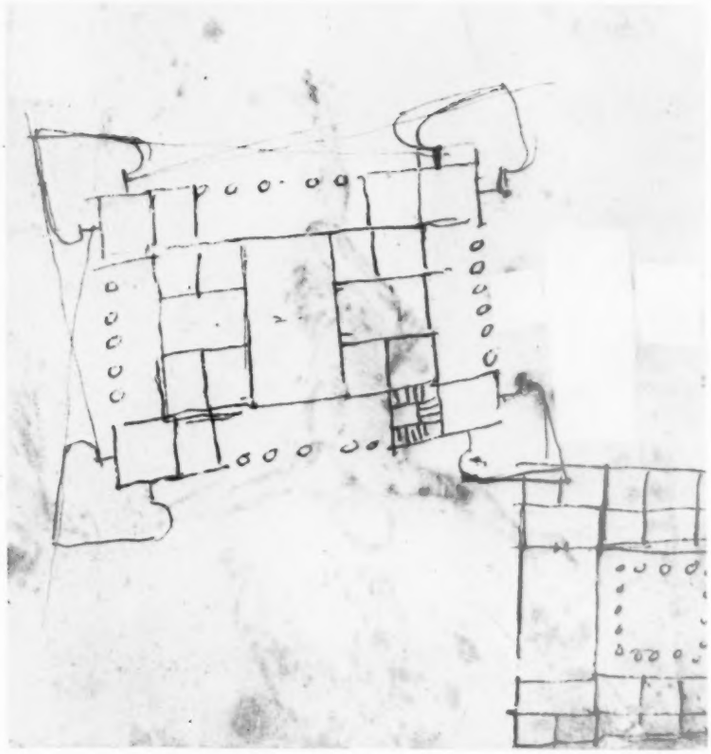
2. Baldassare Peruzzi, Plan of a radial city with central *rocca* Florence, Uffizi, Arch. 557-A



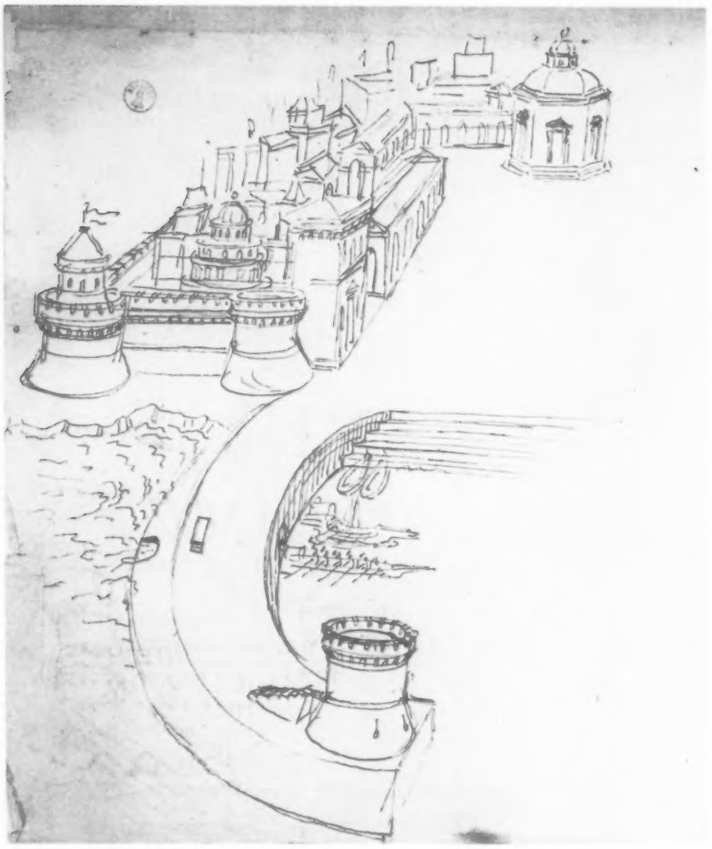
3. Cesariano, Plan of a Vitruvian city (From *Di Lucio Vitruvio Pollione de architettura*, Como, 1521, fol. 26v)



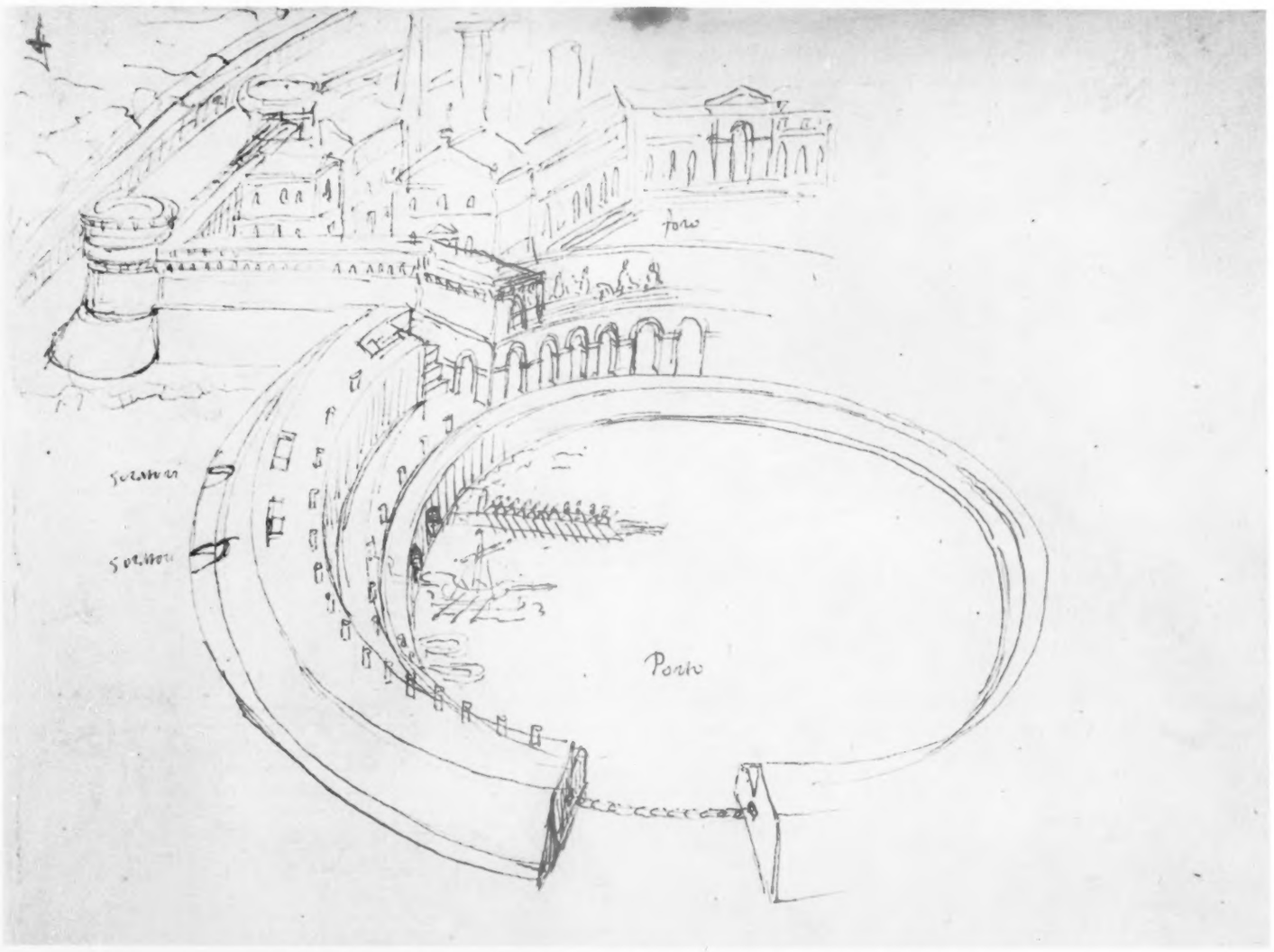
4. G. B. Caporali, Ideal city plan constructed according to Vitruvius (From *Vitruvio in volgar lingua*, Perugia, 1536, fol. 41r)



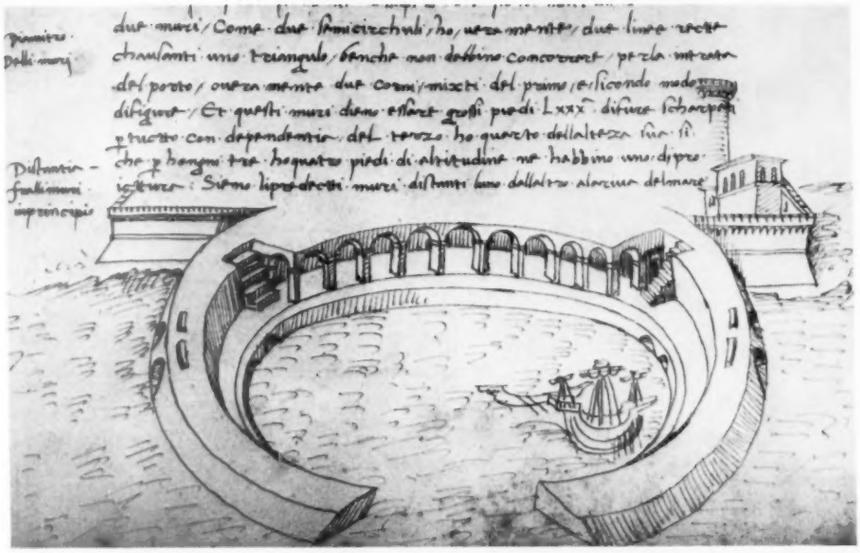
5. Francesco di Giorgio, Plan of a fortified palace
Florence, Uffizi, Arch. 336-A



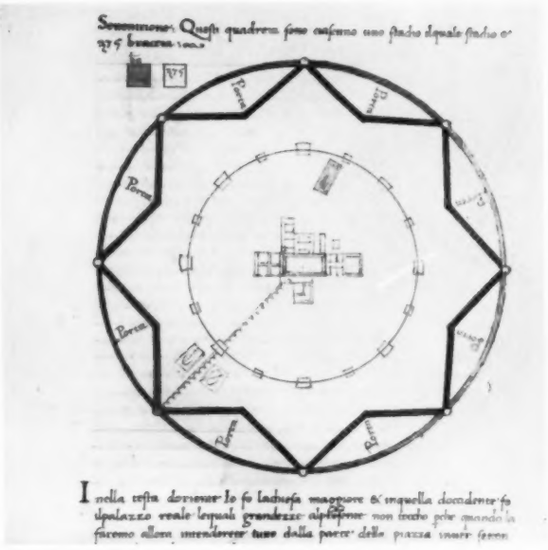
6. Antonio da Sangallo il Giovane, Harbor city
Florence, Uffizi, Arch. 1302^{v}



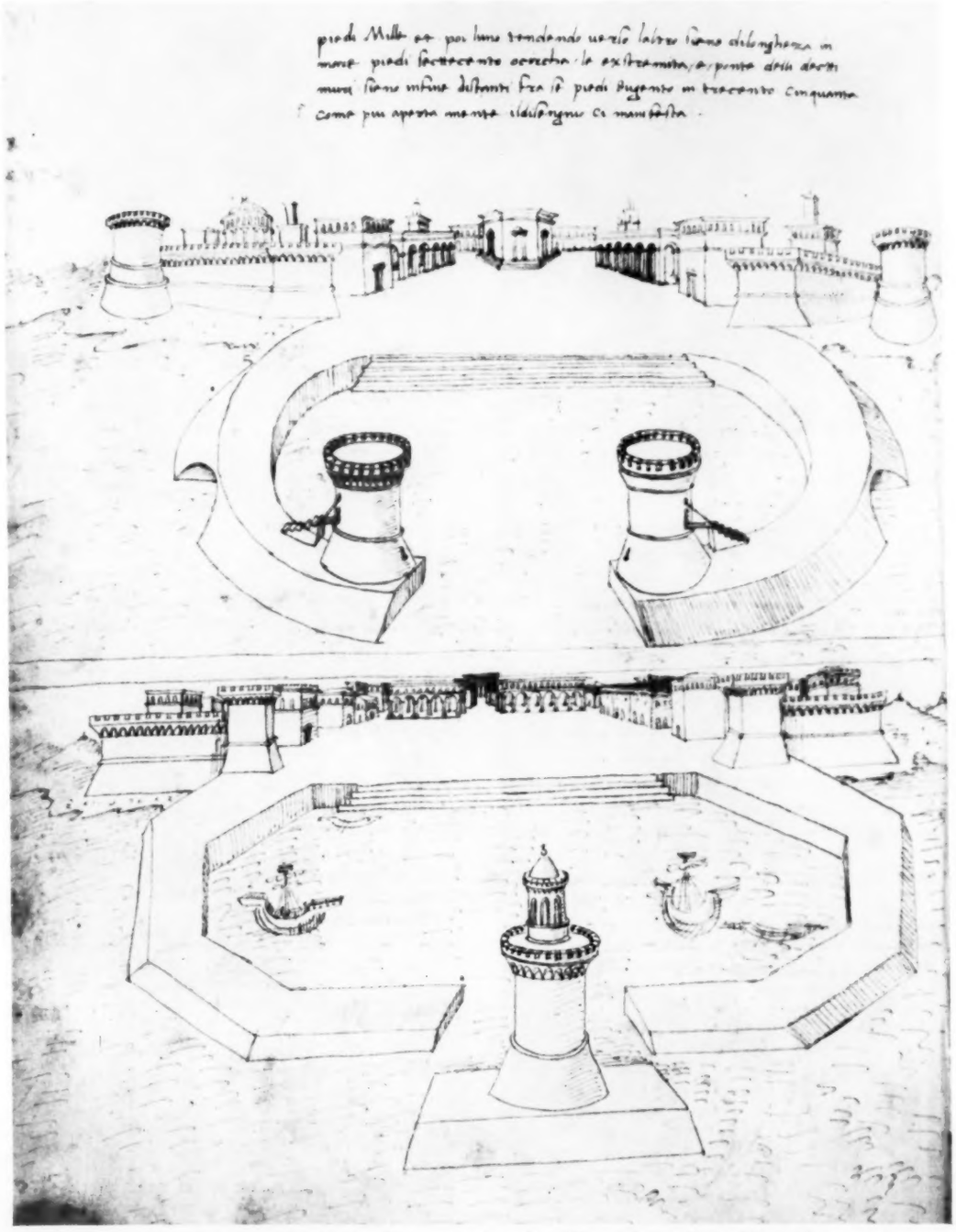
7. Antonio da Sangallo il Giovane, Perspective design of a harbor city. Florence, Uffizi, Arch. 1302^{r}



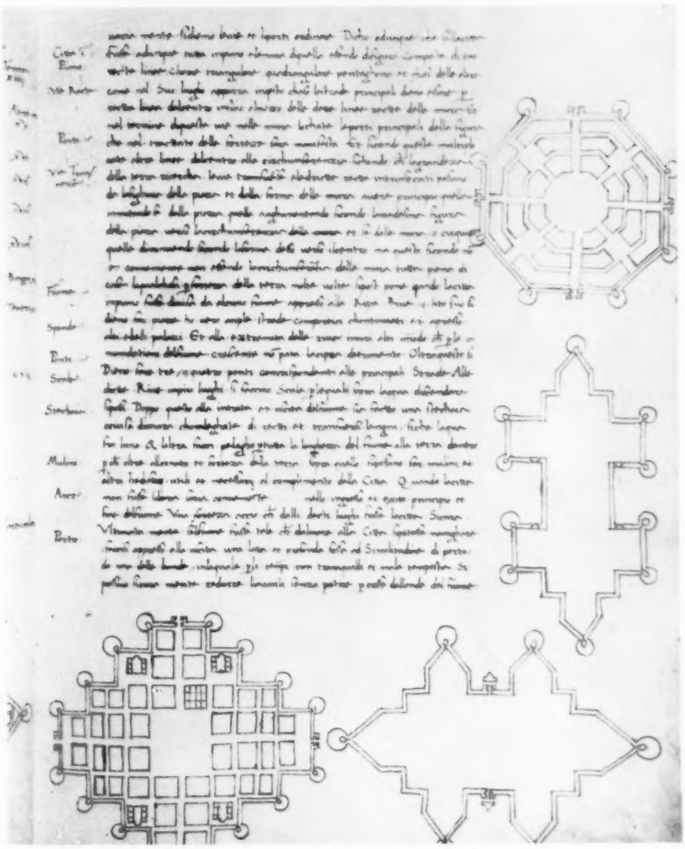
8. Francesco di Giorgio, *Trattato* illustration (From Codex Magliabecchianus, fol. 86[r])



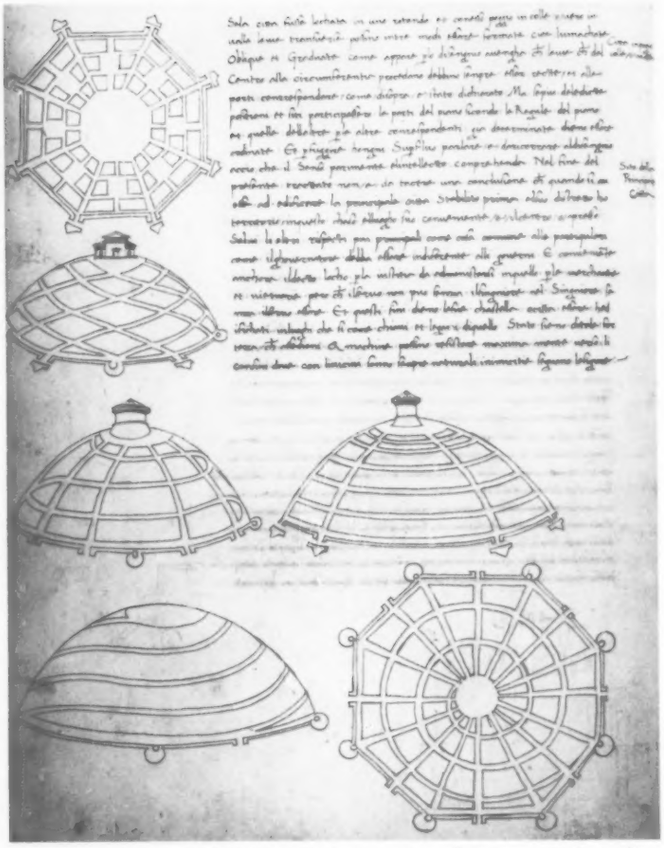
9. Filarete, Plan of "Sforzinda" (From *Trattato*, Cod. Magl. fol. 43[r])



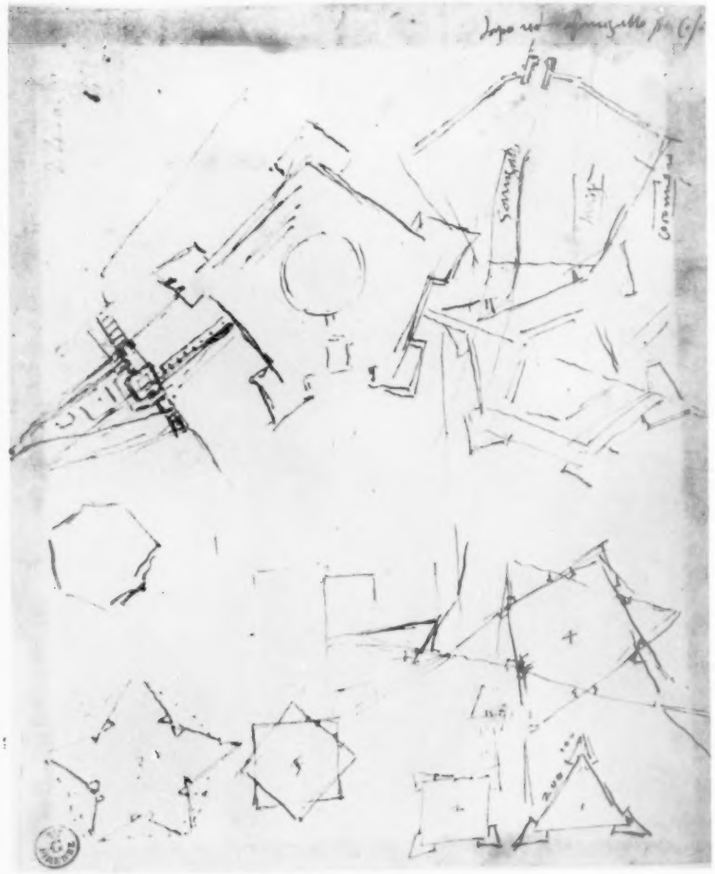
10. Francesco di Giorgio, *Trattato* illustration (From Cod. Magl. fol. 86[v])



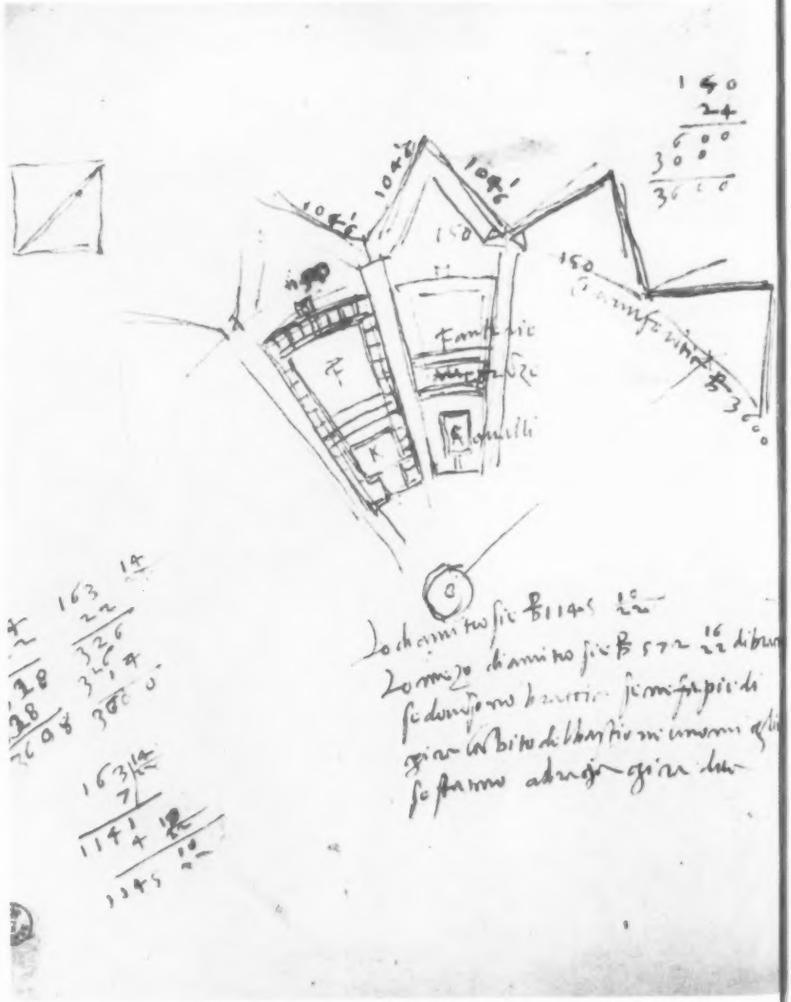
11. Francesco di Giorgio, Ideal city plans (*Trattato*, fol. 29^{r})



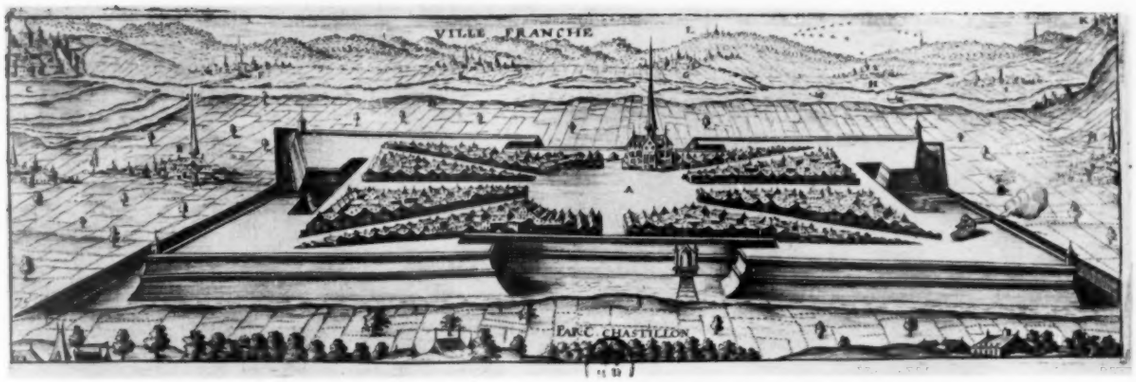
12. Francesco di Giorgio, Radial city plans (*Trattato*, fol. 29^{v})



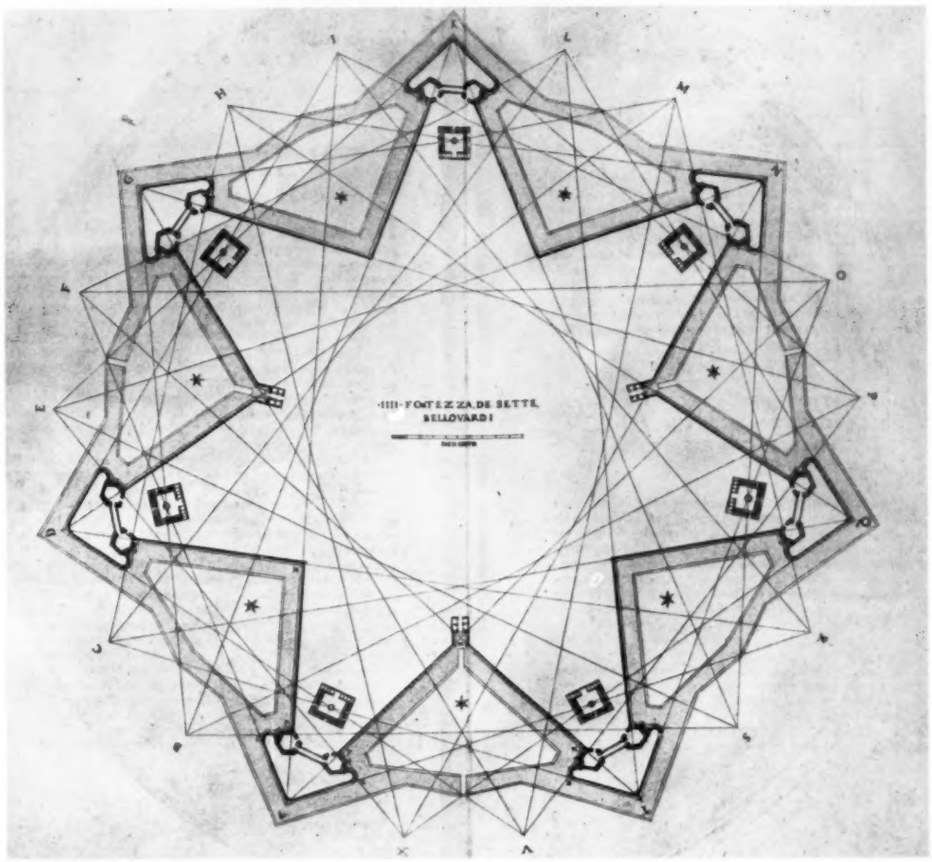
13. Antonio da Sangallo il Giovane, Designs for fortress shapes
Florence, Uffizi, Arch. 758



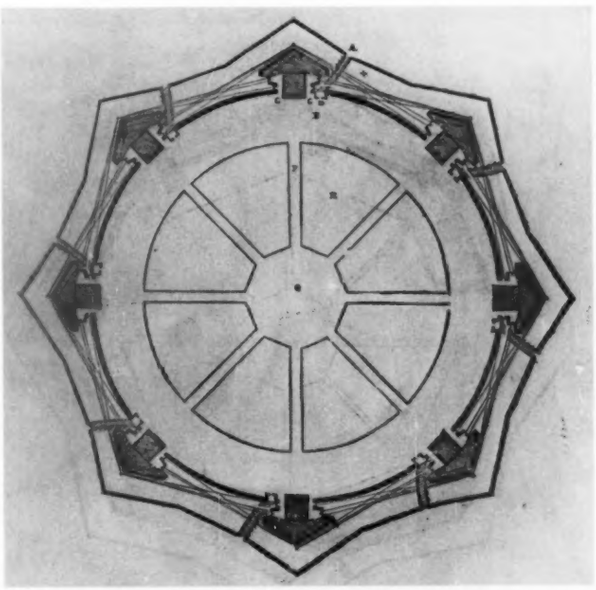
14. Antonio da Sangallo il Giovane, Partial plan of fortress with radial interior. Florence, Uffizi, Arch. 1245



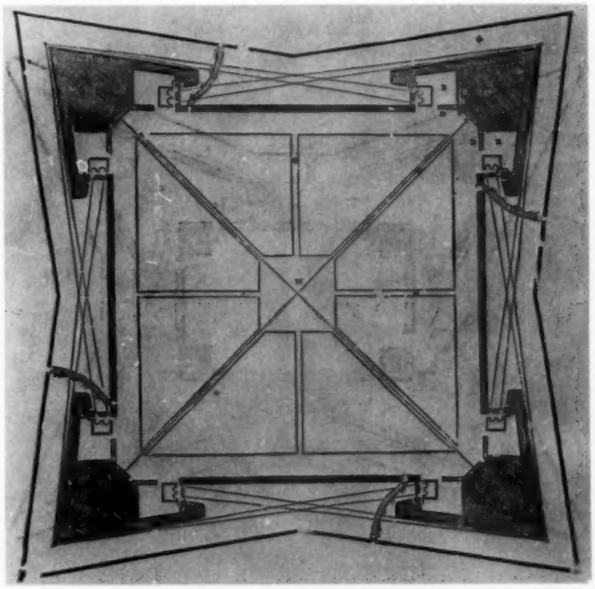
15. Plan of Villefranche (From Chastillon, *Topographie française*, 1643, pl. 75)



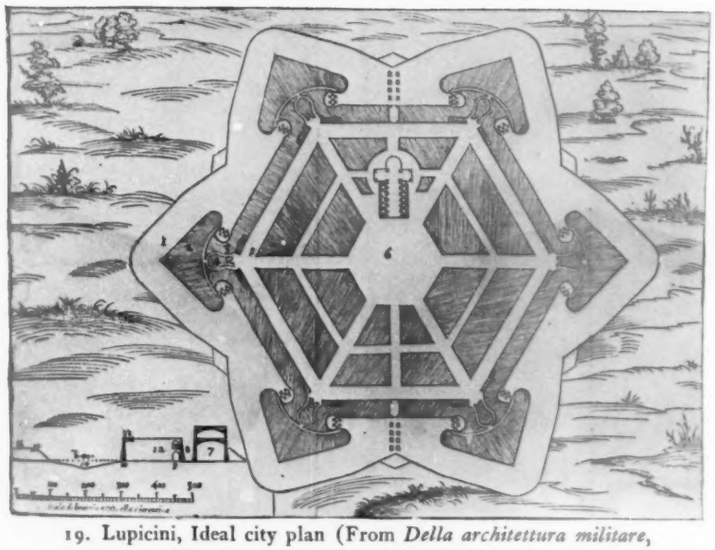
16. Galasso Alghisi, Design for an ideal fortress with seven bastions (From *Delle Fortificazioni libri tre*, Venice, 1570, II, pp. 142-143)



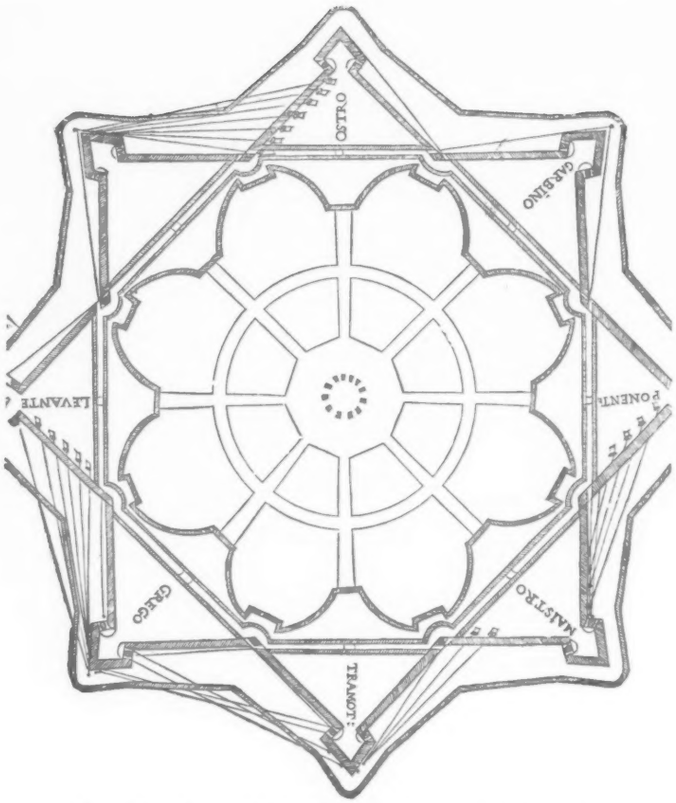
17. Bellucci, Fortified round city with radial interior (From *Nova invenzione di fabricare fortezze*, Venice, 1598, p. 70)



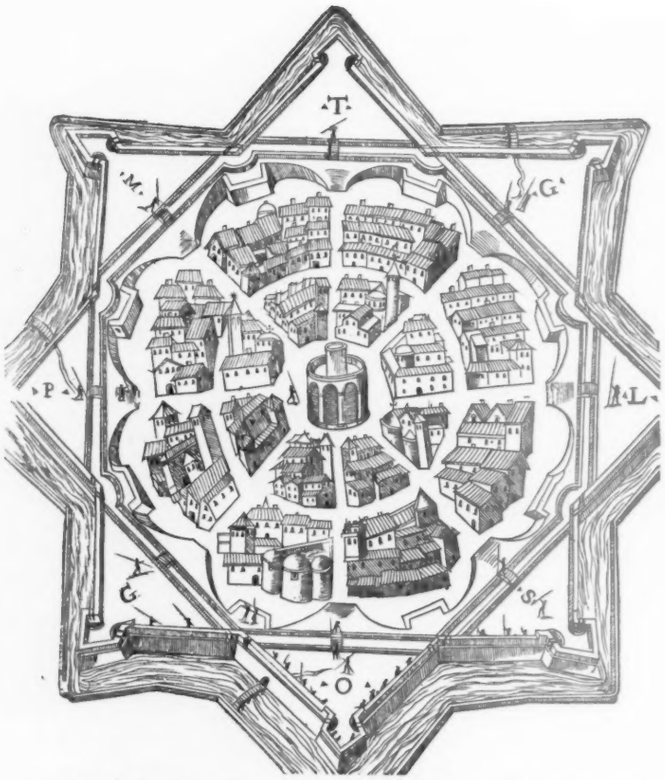
18. Bellucci, Fortified square (From *Nova invenzione*, p. 63)



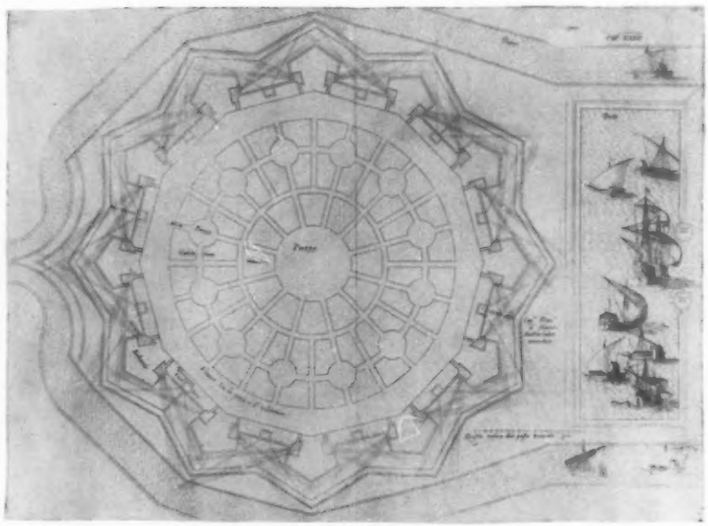
19. Lupicini, Ideal city plan (From *Della architettura militare*, Florence, 1582, plate following p. 32)



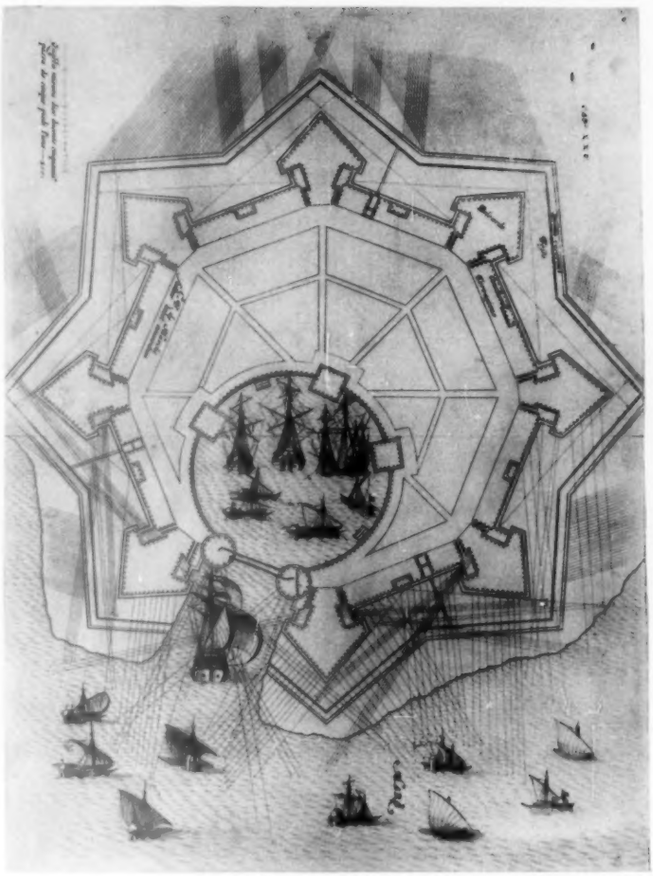
20. Maggi-Castriotto, Ideal city plan (From *Della fortificatione della città*, Venice, 1564, fol. 52[r])



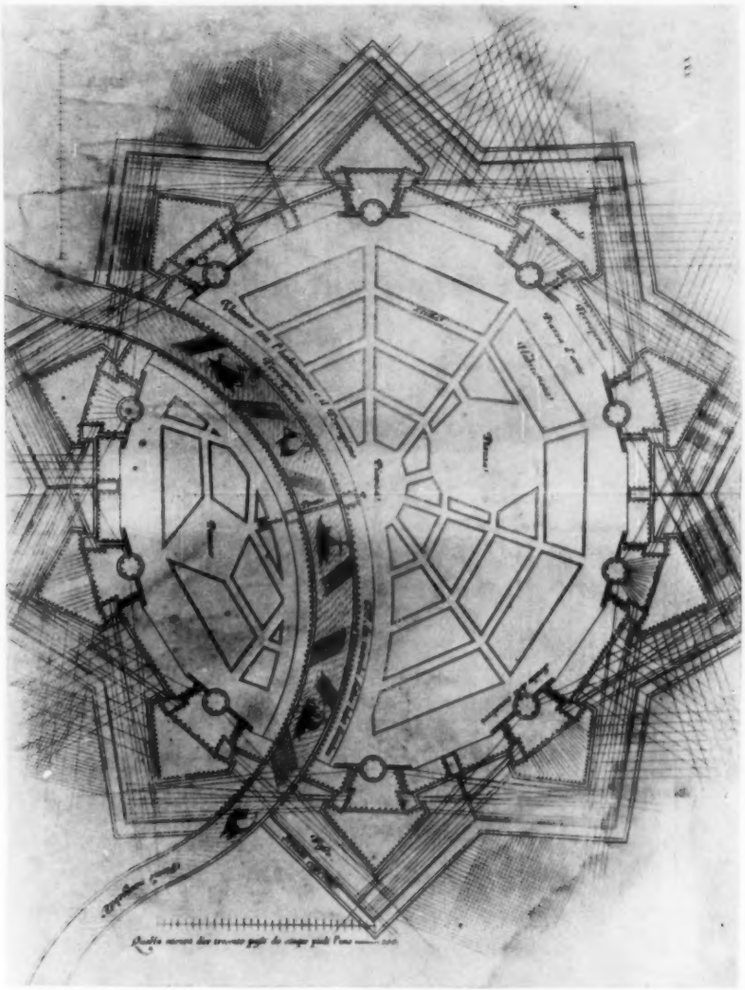
21. Maggi-Castriotto, Perspective view of Fig. 20 (*Ibid.*, fol. 52[v])



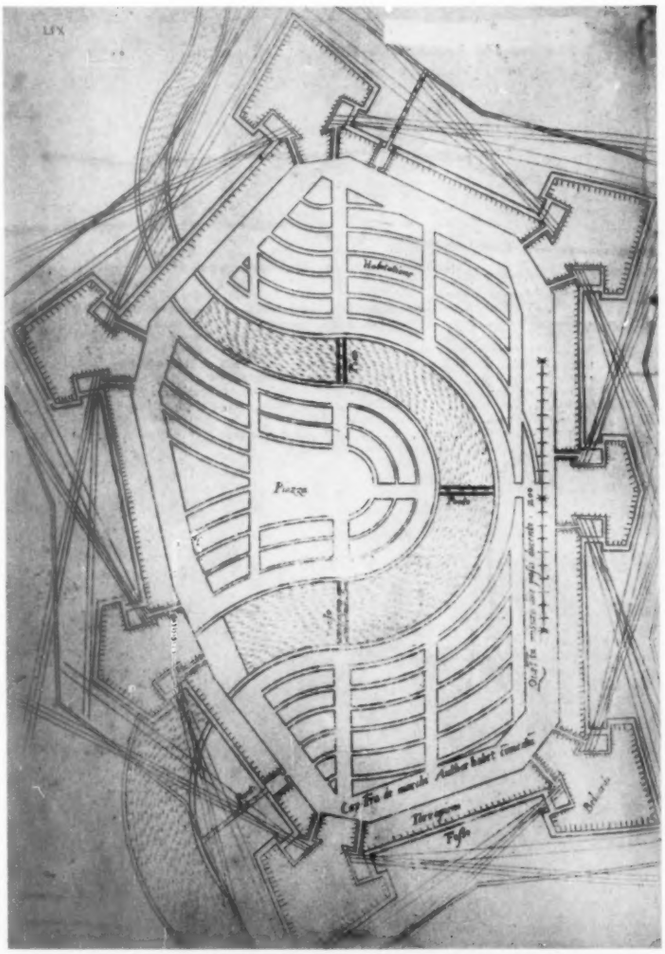
22. Francesco de Marchi, Harbor city with twelve bastions (From *Della architettura militare*, Brescia, 1599, fol. 71[v])



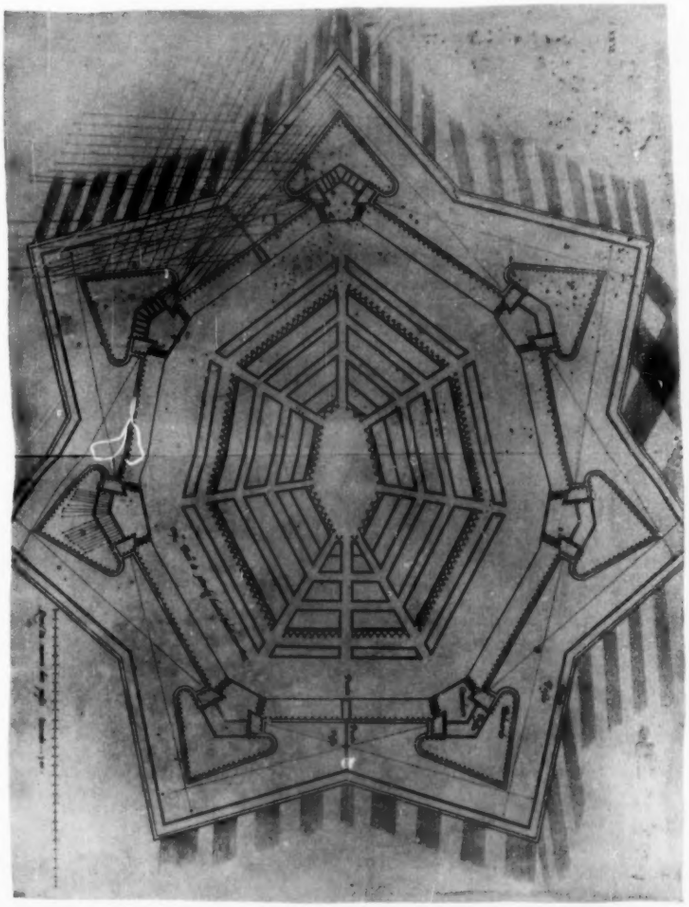
23. Francesco de Marchi, Harbor city with eight bastions (From *Della architettura militare*, fol. 69^{v})



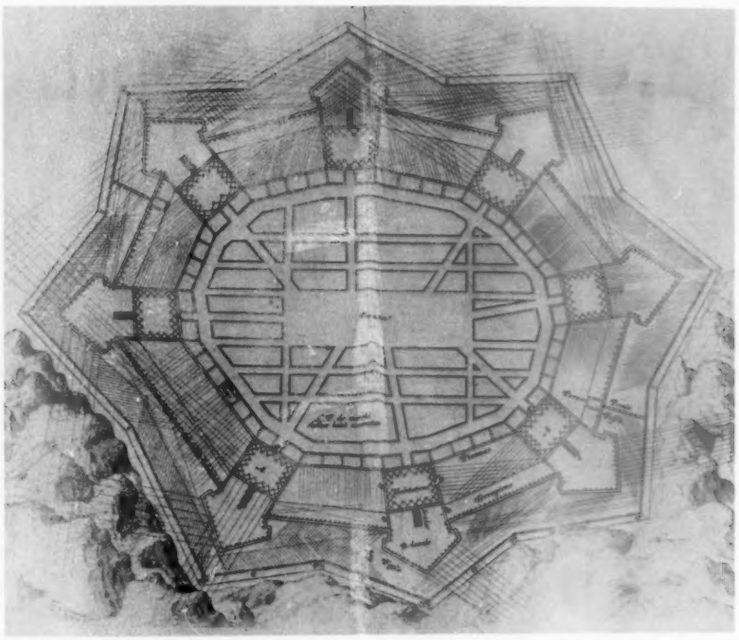
24. Francesco de Marchi, Radial river city (From *Della architettura militare*, fol. 278^{v})



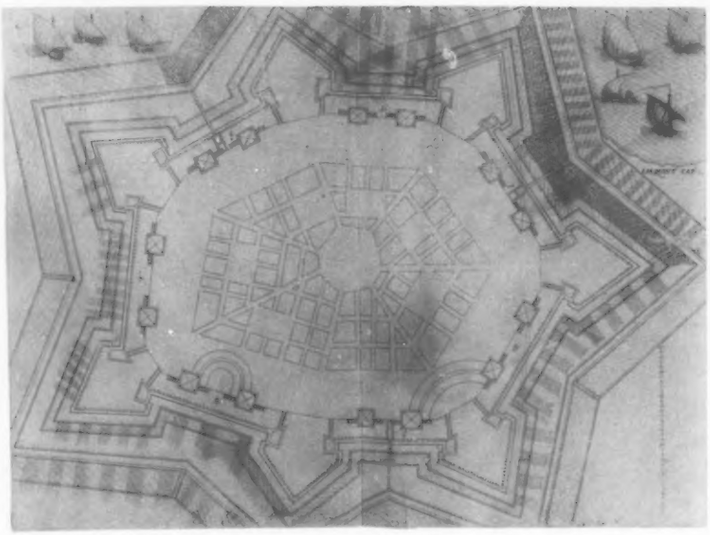
25. Francesco de Marchi, River city (From *Della architettura militare*, fol. 108^{v})



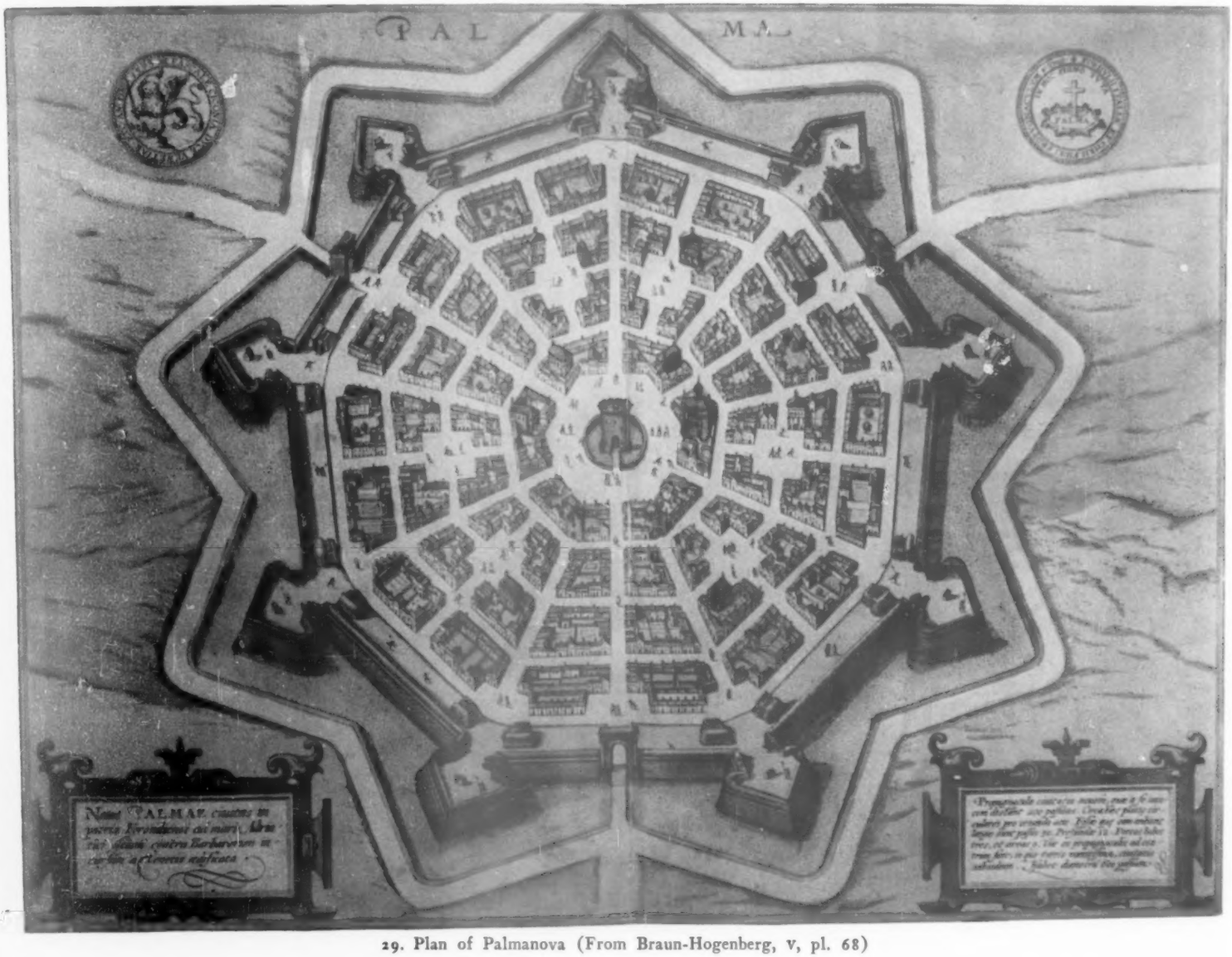
26. Francesco de Marchi, Oblong radial city with seven bastions (From *Della architettura militare*, fol. 208^{v})



27. Francesco de Marchi, Eight-bastioned city for mountainous terrain (From *Della architettura militare*, fol. 162[v])



28. Francesco de Marchi, Seven-bastioned city for a seashore (From *Della architettura militare*, fol. 162[v])



29. Plan of Palmanova (From Braun-Hogenberg, v, pl. 68)

Vitruvian urbanism which insisted on rectangular piazze and building blocks. He took the decisive step by adapting the shape of his central piazza to the radial street system and, indirectly, to the city's circumference (Figs. 11 and 12).[31] With this new urban concept, Francesco was able to design an entirely new type of city plan which was to become the model for all later radial plans. In one or the other of his designs, he forecasts practically all the features of sixteenth century radial plans. There was little left for other architects to invent, as they had to be content with systematizing and refining the elements that Francesco had shown them. Even the crowning achievement of Italian radial urban design, Palmanova, was little more than a variation on one of Francesco's themes.

There remained only one aspect that Francesco failed to develop in his *Trattato*, namely the recognition of the full value of radial planning to the new system of fortification. This welding of the two elements into one indivisible unit was accomplished only toward the middle of the sixteenth century. Nevertheless Francesco di Giorgio must be credited with having furnished the basic tools that were refined, in the hands of the following generations, into the highly polished instrument of military precision that was the radial city plan of the late sixteenth century.

The Architect as Military Engineer

Along with and after Francesco di Giorgio, the greatest artist-architects were also the most sought-after military engineers of their time. Leonardo's consuming interest in things military is amply illustrated by the Codex Atlanticus, which contains, along with a great number of weapon designs, numerous drawings of fortifications.[32] Bramante was employed as a military engineer by Lodovico il Moro in 1493.[33] Peruzzi, periodically after 1527, served his native Siena as inspector and designer of fortifications.[34] Michelangelo's projects for the fortification of Florence have aroused the interest even of art historians.[35] But while these men devoted only a relatively small part of their time to matters of fortification, the military works of Michele Sanmicheli and Antonio da Sangallo the Younger may actually outnumber their civilian ones.

Sanmicheli's eminence as military architect is attested by the fact that Vasari credited him, even if erroneously, with the invention of the triangular bastion.[36] In the service of Venice, Sanmicheli made designs for and executed literally dozens of major fortification projects, most of them in northern Italy and in the Venetian Near Eastern colonies.[37] While he may not have invented the triangular bastion, Sanmicheli certainly carried the method of bastionated defenses to a high degree of refinement, and his work was influential for all later military architecture, particularly

31. The significant passages on city planning are to be found in Book 3, chaps. 1 and 2, of Francesco's *Trattato*.

32. In addition to the ones already mentioned in note 27 above, important fortification designs appear on folios 45^{v}, 47^{v}, 48^{r}, 343^{r}, and 355^{v} of the Codex Atlanticus (ed. Hoepli). Leonardo's designs for artillery pieces and related material are so numerous and well known that special reference to them seems superfluous.

33. Cf. Venturi, *Storia*, IX, pt. 1, pp. 52f. For Bramante's activity as military architect in Rome, cf. A. Guglielmotti, *Storia delle fortificazioni nella spiaggia Romana*, Rome, 1887 (henceforth cited as *Fortificazioni*), pp. 33, 186f., where he is given major credit for the citadel of Civitavecchia.

34. Cf. Venturi, *Storia*, IX, pt. 1, pp. 359ff., figs. 361-363, for Peruzzi fortifications at Siena.

35. Cf. Charles de Tolnay, "Michelangelo Studies," ART BULLETIN, XXIII, 1940, pp. 127ff. For Michelangelo's military works in Rome, cf. Guglielmotti, *Fortificazioni*, pp. 342-350, 389-405, where the Bastione Belvedere and the Mastio Sanmichele are attributed to him. See also A. Schiavo, *Michelangelo architetto*, Rome, 1949, figs. 151-168, for reproductions of Michelangelo's fortification designs; V. Scully, "Michelangelo's Fortification Drawings: A Study in the Reflex Diagonal," *Actes du XVIIme Congrès international d'histoire de l'art*, The Hague, 1955, pp. 323-332; a shorter version of the same in *Perspecta*, 1, 1952, pp. 38-45.

36. See Note 19 above.

37. Among Sanmicheli's major fortification works are plans for the defenses of Brescia, Bergamo, and Peschiera in northern Italy; Herakleion, Canea, Settia, and Rethymo on Crete. In 1535 he corrected the port entrance of Malamocco; in 1536 and 1548 he built two large bastions at Padua; in 1544 he designed the Fort of Sant' Andrea for the entrance of the Lido port of Venice; he also refortified Marano, a fortress town on Venice's eastern borders. Intermittently, he worked on the defenses of his home town, Verona, where his Porta Nova (1533-1540), Porta San Zeno (1540-1542), and Porta Pallio (1542-1555) became basic standards for later portal designs. Cf. Vasari, *Le vite*, VI, pp. 341ff.; H. Willich in Thieme-Becker, *Kuenstler-Lexikon*, XXIX, pp. 411ff.; Venturi, *Storia*, IX, pt. 2, pp. 224ff.; and E. Langenskiold, *Michele Sanmicheli*, Upsala, 1938, whose chapter on fortification is one of the best that has been written on the subject by an art historian.

that of Venice. His fortified city gates of Verona are considered masterpieces of their kind, and their influence can be recognized half a century later in Scamozzi's gates for Palmanova.

Equally prolific and perhaps even more influential for later military architecture was Sanmicheli's great contemporary Antonio da Sangallo the Younger, whose work summarizes the progress made by the art of fortification during the first half of the sixteenth century.[38] Beginning with the round-towered forms which Francesco di Giorgio advocated in his *Trattato* and which Antonio helped to build at Civitavecchia,[39] Sangallo's work gradually evolved into the true bastionated system of the Fortezza da Basso of Florence. Here, a pentagonal stronghold was fortified with triangular corner bastions which, while still rather pointed, incorporated most of the features considered desirable by later military planners. The interlacing fire from bastion flanks protected not only the curtains between them, but also the faces of neighboring bastions. The distance from flank to flank was adjusted to the current range of artillery, and the entire silhouette of the fortress was lowered to the point where, probably, only the upper third of the walls projected above the rim of the counterscarp.[40]

Numerous Uffizi designs exhibit Sangallo's concern over the best possible basic shape for a fortress. He experimented with all types of geometric figures, from triangles to many-sided polygons. He seemed to be particularly fond of star-shapes, which are the most numerous among these rapid sketches and include eight-pointed stars constructed in Filarete's manner (Fig. 13).[41] In at least one instance, Antonio presents a tentative solution to the problem of interior communications of a fortress by combining a quarter of a fourteen-pointed star with a radial street system (Fig. 14). While these drawings are theoretical exercises, most of Antonio's designs at the Uffizi are concerned with the solutions of actual commissions. In these, Antonio proves himself to be a solid practitioner who pays as much attention to the topographical demands of the site as he does to the technical aspects of constructing fortification belts with solidly interlacing lanes of fire.

While Sangallo's military design reached its height in the Fortezza da Basso of Florence, his most admired work was the Bastione Sangallo of Rome, which was praised by his contemporaries as being the most beautiful bastion in all Italy.[42] Through works like these, as well as through personal contacts with the most important military architects of his time, Sangallo's influence on military architecture must have been considerable. And, in fact, De Marchi does refer to Sangallo as one of the "valentissimi uomini nell'arte di fortificare," who developed the modern method of fortification with flanking batteries.[43]

38. Among the fortifications for which Antonio da Sangallo the Younger either furnished designs or which he actually executed are: Civitavecchia (1508-1515), Parma (1525), Piacenza (1526f.), the Fortezza da Basso, Florence (1534-1537), Castro (1534-1542; destroyed 1649), Nepi and Ancona (1537), Perugia (1540-1543), and various fortifications for Rome (1534-1546), including the unfinished Porta di Santo Spirito and the so-called Bastione Sangallo near the Porta Ardeatina. Cf. Vasari, *Le vite*, V, pp. 475ff.; Thieme-Becker, *op.cit.*, XXIX, pp. 403ff.; Venturi, *Storia*, IX, pt. 2, pp. 516-683; also G. Clausse, *Les Sangallo*, Paris, 1901.

39. Venturi (*Storia*, IX, pt. 1, p. 52) attributes the citadel to Antonio without reservations. For illustrations see *loc.cit.*, figs. 481 and 482. More credible is Guglielmotti (*Fortificazioni*, pp. 193f.) who believes that Antonio was too young to be entrusted with so important a commission in 1508, when construction of the citadel was begun. He contends, therefore, that Antonio either executed Bramante's designs or, if he designed the fortress himself, that he did so under Bramante's close supervision. However, in 1514, Sangallo did fortify the city with a bastionated enceinte, which is the earliest surviving bastionated system anywhere.

40. The ditch has now been filled in, leaving only the upper parts of the bastions and curtains exposed. Originally, the counterscarp may have reached up as high as the level of the *cordone*, which today lies some eight feet above ground level.

41. Later technicians generally condemned the star as one of the weaker basic shapes which did not lend itself to efficient fortification (cf. Francesco de Marchi, *Architettura militare*, Brescia, 1599, I, ch. 27; III, ch. 9).

42. *Ibid.*, I, ch. 39. While De Marchi does not mention Antonio as the designer of this bastion, he writes that he saw it while it was under construction and praises it highly. He modifies his praise, however, by adding that it was also the most expensive bastion that had ever been built in Italy. Attribution of this bastion to Sangallo was made by Guglielmotti (*Fortificazioni*, pp. 399ff.) and is concurred in by Venturi (*Storia*, IX, pt. 1, pp. 631-634). For illustration, see *ibid.*, fig. 587.

43. Francesco de Marchi, *op.cit.*, I, ch. 16.

The artist-architect of the early sixteenth century imparted an architectural character to fortification which, on one hand, may be considered a survival of mediaeval features, but which, more likely, should be viewed as an extension of "Schoenbau" qualities to the functional requirements of the fortress. This trend may be recognized in the insistence of the architects on executing their bastions and curtains in brick and stone masonry. The northern method of constructing ramparts in wood-reinforced earth did not appeal to these men who had been brought up in the southern tradition of stone architecture. The efficiency of earthen defenses had been recognized as early as the last decade of the fifteenth century,[44] but in Italy earthworks were never considered to be more than temporary expedients or emergency aids, which were to be replaced by permanent stone masonry as soon as possible. While the advantages of earth over stone as building material for fortifications was the frequent subject of theoretical debate, the architects continued to build in stone.[45]

This desire to impart an architectural character to fortifications is expressed also in various attempts to embellish their exteriors. Decoration was usually confined to the area around the gate and sometimes to a decorative molding of the "cordone," but in the Fortezza da Basso, Antonio da Sangallo the Younger went beyond these limited fields and applied decorative treatment to a section of the fortress wall proper. The surface of the single cavalier which projects from the center of the longest curtain is rusticated and bears a decorative design of alternating diamond and hemispherical shapes.[46] Its gray stone surface contrasts strongly with the red brickwork of the adjoining curtains and injects a measure of relief into an otherwise featureless expanse of blank wall surfaces. The cannonball motif seems appropriate enough and conforms to the opinion of some later theoreticians, like Gabrio Busca, who concede that some decor may be applied to the exteriors of fortresses if it is in keeping with and expresses the purpose of the structure.[47] Such niceties, however, are extremely rare, and they are not to be found at all later in the century when the field of military architecture had become the exclusive domain of soldiers and practical engineering specialists.

Division in the Field of Architecture

Around the middle of the sixteenth century, a split occurred in the field of architecture which may be regarded as symptomatic of a time when life had become increasing complex under the impact of rapidly expanding scientific and technological knowledge. It was a time when the field of human knowledge had grown to the point at which a single individual was no longer able to master it in all its aspects and when the accumulated knowledge had to be divided into a number of as yet loosely defined segments, each of which became the focus of attention for groups of newly emerging specialists.

In the field of architecture, this tendency was expressed by a split into two branches, the civil and the military. As the building of fortifications posed ever greater demands upon the technical and military knowledge of their builders, princes and potentates began to rely more and more on the limited but specialized talents of the military engineers. Sanmicheli and Antonio da Sangallo the Younger were at once the last dual-purpose architects who worked in both civil

44. Cf. Taylor, *The Art of War in Italy*, pp. 134ff.

45. Michelangelo was one of the first Italians to recognize the full value of permanent earthen fortifications and used them at Florence in 1529 (cf. Guglielmotti, *Fortificazioni*, pp. 399f.). The question of earthen versus masonry fortification also entered strongly into the famed Michelangelo-Sangallo dispute over the defenses of the Borgo in 1545 (cf. *ibid.*, pp. 338f.).

46. For illustrations, see Venturi, *Storia*, IX, pt. 1, figs. 572-574. "Cavalier" is the military term for a raised artillery platform built to strengthen a curtain center or to back up a bastion.

47. Cf. Gabriello Busca, *Della architettura militare*, chaps. 32 and 75. Busca's occasional references to functional beauty in architecture make him sound almost like a 16th century Louis Sullivan. In ch. 32, p. 114, for instance, he writes: "Anzi da cercarsi con diligenza, secondo però l'ordine conveniente di questa sorte di fabrica, che si otterrà con la ragionevole, & proportionata symmetria de membri trà di loro, & di tutte le parti al corpo. Dalla cui ordinata proportione, ne risulterà che l'opera sarà di grave, non già di grato, ne di piacevole: ma più tosto di superbo, & rigido aspetto."

and military architecture, and the first representatives of the new trend of specialization. Whereas most earlier architects had devoted only a relatively small part of their time to fortification, these two men were burdened with so great a number of military commissions, that their execution must have required the greater part of their working time. While not yet specialists to the exclusion of other interests, they were the first representatives of a trend that was to accelerate throughout the sixteenth century and finally lead to the complete exclusion of civil architects from military construction.

The split became decisive around 1550 and is reflected in the treatises on architecture which were published after that time. With the exception of Scamozzi, Pietro Cataneo was the last to write a treatise that dealt with both the civil and the military phase of architecture.[48] Palladio was no longer interested in military construction. On the other hand, the numerous writers on fortification of the second half of the century completely ignored the civilian aspects of architecture. That this trend toward specialization was fully recognized at the time is clearly expressed by Giovan Battista Bellucci, who not only rationalized the need for the employment of specialists but who openly criticized the meddling of civil architects in matters of fortification.[49]

Bellucci begins his treatise with a chapter on the qualities which are desirable in a military engineer. He divides the requirements into "speculative" and "operative" knowledge. Speculative knowledge includes the ability to estimate and foresee all possibilities that may arise during a siege. Operative knowledge includes a knowledge of mathematics, the ability to operate instruments, draw plans, and estimate costs, and a sound knowledge of the qualities of building materials. While this really constitutes only part of a good architect's full knowledge, Bellucci writes, it is sufficient for the needs of the military engineer. And since there are very few people who can possess both required qualities, i.e. the speculative and the operative, the work of building fortifications should be divided between two men. One of these should be an experienced soldier, the other a good master mason who has some knowledge of architecture.[50]

This is indeed a far cry from the recommendations for an architect's background which were made by Filarete, Alberti, and other followers of Vitruvius, who wanted their architects to be adept in philosophy, music, history, and astrology, in addition to geometry, mathematics, optics, and other related fields. No longer is one man to be entrusted with the entire job of planning and building a fortress, but the responsibility is to be delegated to several men, each a specialist in a limited field. The "uomo universale," who dominated the preceding century, was becoming extinct by the middle of the sixteenth.

Bellucci emphasizes repeatedly that, in his opinion, the building and planning of fortifications is primarily the soldier's responsibility and not that of the architect. Architects and "dottori" have no experience in, nor knowledge of modern warfare, which is quite different from that of the ancients and cannot be learned from a study of classical literature. Only the experienced soldier can foresee what a potential enemy might be able to do against a planned fortress.

48. Pietro Cataneo, *I quattro primi libri di architettura*, Venice, 1554. Cataneo added four more books to this first edition and published it under the title of *L'architettura di Pietro Cataneo Senese*, Venice, 1567.

49. Giovan Battista Bellucci (Belici) (1506-1554) was born in San Marino. He studied architecture in Rome under his father-in-law, Girolamo Genga and, later, worked as military engineer for Duke Cosimo I of Tuscany (cf. Promis, *M.s.i.*, XIV, 1874, pp. 197-208). According to his treatise, Bellucci spent some time in Lorraine (p. 47) and also Hungary (pp. 45 and 51). Either in Rome or during the Sienese war, Bellucci became acquainted with some of the greatest military architects of his time, including Castriotto and De Marchi. The former paid homage to Bellucci in his treatise and quoted him at length on the installation of siege batteries (G. Maggi and J. Castriotto, *Della fortificazione delle città*, Venice, 1564, III, pp. 138f.). Bellucci was highly esteemed not only by his co-workers, but also by Vasari whom he befriended and who devoted several pages to Giovan Battista in his *Le vite* (VI, Vita di Girolamo Genga, pp. 330-334). Bellucci's treatise on military architecture, entitled *Nova invenzione di fabricar fortezze di varie forme*, Venice, 1598, was published posthumously by Tommaso Baglione and, like most posthumous publications, suffers from organizational defects.

50. Bellucci, *Nova invenzione* . . . , ch. 1: "Ma perche sono rari quelli huomini quali sono dotati della speculativa, et dell'operativa insieme, io stimo esser cosa conveniente, per voler adurre a perfettione una fortificatione, che il speculativo sia un soldato, qual per esperienza di guerra sappi bene speculare, quanto sia il bisogno occorente. L'altro operativo sia un buon Capitano maestro di muratori, qual habbia qualche buon principio dell'Architettura. . . ."

Architects should continue to build their churches and palaces, their bases, columns, architraves, and cornices, but should stay away from fortifications that require strong parapets and good sorties and should be entrusted only to experienced practitioners who have a solid background in military matters. Of course Bellucci admits that, for the well-being of society as a whole, architects are as necessary as soldiers. But each has his proper place and job, and architects should not meddle in matters of fortification, of which they understand nothing. All architect-built fortifications have serious defects, Bellucci claims, including those built by Antonio da Sangallo at Florence.[51]

While Bellucci's attempts to expel the legitimate architect from the field of fortification are the most vehement, his opinions are not isolated and they are echoed, although less belligerently, by several of his contemporaries. Francesco de Marchi concedes that the architect has a place in the building of fortresses, but only as one member of a group of experts and specialists.[52] Antonio Lupicini believes that any architect who is called upon to design a fortress should be permitted to do so only under the close supervision of military men.[53] Thus, during the second half of the sixteenth century, the military engineer firmly entrenched himself in and displaced the civil architect from the field of military architecture.[54]

Adoption of the Radial Plan by the Military Engineer

By the middle of the sixteenth century, the bastionated system of fortification had been developed to a fair degree of perfection. Most of the basic discoveries had been made and applied by the artist-architects of the preceding half century. What remained to be done was the refinement of individual inventions, their systematization and integration into a unified

51. *Ibid.*, p. 51: ". . . et che cio sii il vero vi dico che tutte le fortezze che si trovano in Italia fatte per Architetti senza consiglio de soldati patir grande oppositioni come di Fiorenza fatta d'Antonio Sangallo di Piasenza ordinata da Zanstefano Negro et molte altre in Italia et fuor d'Italia quale patiscono mancamenti, et mancamenti d'importanza, et pero devra il prencipe che vuol far una fortezza pigliar il consiglio da soldati et da quelli à i quali gli la darebbe da custodire quando fosse il bisogno et non à dottori perche ne misure ne libri non combattono. . . ."
p. 52: ". . . raccordando che non si deve dar il cargo à Architetti, ne a muratori, ne à maestri di legname, ne à Dottori perche questi tali non farano mai cosa buona se non hanno pratica del modo con quale à nostri tempi si combate essendo assai differente da quello di tempi passati ricercando questo tempo altro che libri, ò architettura, adoperandosi piu astutia che forza. . . ."
p. 53: ". . . li Architetti et li Dottori si in molti lochi hò ditto questo non esser suo offitio proprio non havendo gia mai veduto in tanti esserciti che mi son trovato l'Architettura à combater ne meno tirar un pezzo d'artiglieria ne far un forte da campo una contramina una traversa . . . pero sara bene che li architetti vadino a far palazzi, chiese, sepoltre, cornise, architrave, base, collone, foggiami, scudi, termini, maschare et trofei, perche a fortezze convengano bone spale, boni parapetti, bone sortie e bone homeni. . . ."

52. Francesco de Marchi, *Architettura militare*, I, chs. 1 and 19.

53. Antonio Lupicini, *Architettura militare*, Florence, 1582, ch. 1, p. 30.

54. The rise of plagiarism is contemporary with and perhaps a product of increasing specialization. Particularly within the ranks of military architects, the concept of intellectual property took a firm hold, as various engineers jealously tried to guard, or at least to reap recognition for, inventions which they claimed to have made. Again Francesco di Giorgio must be credited with a "first." In the prologue to Book 7 of his *Trattato*, he writes that he brings his designs before the public reluctantly, as many ignorant people are only too eager to usurp the glory due to others by taking credit for their inventions. Francesco de Marchi (*op.cit.*, Introduction to Book 3) felt it necessary to emphasize that all the plans shown by him are his own inventions. He has defrauded no one, he writes, although others have defrauded him by using his designs and publishing them as their own.

The strongest accusation of plagiarism, however, comes from Galasso Alghisi and is made against his former friend Castriotto. In *Delle fortificationi libri tre*, Venice, 1570, I, ch. 9, Alghisi accuses Castriotto and Girolamo Maggi of having stolen from him the idea of the stellated polygon with bastionated points. He claims that the theft occurred during the conclave of military architects in Rome in 1542, when he became friends with Castriotto. Since Alghisi's entire treatise is based on this one basic shape, he of necessity had to denounce the only earlier work known to him in which that type of plan had already been published. He certainly could not have claimed to be its inventor had he known Filarete's or Francesco di Giorgio's treatises. In fact, it seems most likely that both Alghisi and Castriotto derived their ideas for this type of plan from Antonio da Sangallo the Younger, who was himself fond of star-shapes for fortifications.

Fear of plagiarism was not confined to the ranks of military architects, but extended into civil architecture as well. Added to the 1554 edition of Pietro Cataneo's *I quattro libri di architettura* is a short treatise on the drawing of the Ionic volute, entitled *Regola di far perfettamente col compasso la voluta del capitello Ionico, per Josephe Salviati pittore ritrovata*, Venice, 1552. In the dedication to Daniele Barbaro, the author states that he had made his invention 11 years earlier. At that time, he had shown his design to Sebastiano Serlio, who had liked it and had promised to publish it shortly under Salviati's name, but nothing had become of this promise. Salviati had, therefore, decided to publish it himself at this time, since the design had recently been stolen by one of "his boys" and he feared that somebody else might appropriate the invention.

system of what was hoped to be an impregnable defensive ring. To this end the professional engineers of the second half of the century applied themselves in both theory and practice.

If these practitioners had merely confined themselves to the development and construction of ever stronger defensive belts, their impact upon urbanism might have remained relatively insignificant. But they soon made the important discovery that the potential strength of their fortifications depended greatly upon an efficient system of interior communications. They found that the radial plan served this purpose ideally. By adopting it and integrating it with their fortification plans, the military architects of the second half of the sixteenth century bridged a period during which the radial plan seemed to have lost its appeal to artists and civil architects and preserved it for the future use of Baroque and modern city planners. A true empiricist, the military architect tested his theory in practical experiment before expounding the advantages of the radial plan to the public. Actual use of the radial plan as part of an over-all defensive design preceded its popularization in numerous later treatises. The test was made not in Italy, but in France by an Italian architect.

During fifty years of spasmodic warfare between France and the Imperium, border towns were razed and rebuilt repeatedly. When warfare came to a temporary halt in 1544 and the antagonists decided at Crépy-en-Laonnois to adjust their boundaries, France lost the town of Stenay on the right bank of the Meuse. To offset this loss, Francis I ordered the erection of a new fortress town on the Meuse, near the village of Saulmory. Inhabitants were attracted by the promise of tax exemptions and the new town accordingly was named Villefranche-sur-Meuse.[55] Its planner and military architect was the Bolognese engineer Girolamo Marini.[56] Chastillon's plan of Villefranche shows the basic shape of the town to be a square, the four corners of which are fortified with huge triangular bastions (Fig. 15).[57] From a large central "place d'armes" eight streets radiate, ur toward the bastions and four toward the curtain centers. Although transverse ring-streets are lacking, this is, in fact, the first use of the radial plan in a fortress town. Villefranche-sur-Meuse was duplicated a few years later on the Imperial side of the border, when an unknown architect built the fortress town of Mariembourg near Liège.[58] The two plans are identical in all their essential features, although Mariembourg is smaller and less symmetrical than Villefranche. New establishments, planned and built from the ground up, these northern European fortress towns represent not only the earliest application of the radial scheme to a modern fortification system but they are, probably, the first realizations of complete radial plans in the history of urbanism.[59]

Villefranche-sur-Meuse antedates the earliest published plan of its type by two decades.[60]

55. Cf. Lavedan, *Urbanisme*, II, pp. 83f.

56. Girolamo Marini (ca. 1500-1553) was born in Bologna. Between 1537 and 1542 he worked as military engineer in Piedmont, after that in France (cf. Promis, *M.s.i.*, IV, 1863, pp. 614-627). During the years 1544-1546, when France fortified its eastern frontiers, most of the major works were probably supervised by Marini who was highly esteemed by his superiors and was awarded the Order of Saint Michele by the French king. While other Italian engineers participated in those works and claimed the credit for some of them, Marini almost certainly was responsible for the design of the towns and fortifications of Vitry-le-François and Villefranche-sur-Meuse.

57. Chastillon (*Topographie française*, 1643) shows another view of Villefranche on plate 48, on which the street plan is not recognizable. This second view, if it represents the same town, suggests that Villefranche may never have been built in as neat and regular a fashion as shown on Fig. 15.

58. Cf. Lavedan, *Urbanisme*, II, p. 84. The date of Mariembourg's foundation seems to be unknown beyond the fact that the site for the new town was acquired from the Bishop of Liège in 1546.

59. The series of radial fortress towns built in northern Europe continues with Hesdinfort (1554) and Philippeville (1555), both situated near today's French-Belgian border and both built for Emperor Philip II by the Dutch architect Sebastian van Noyen. As far as the theory of fortification is concerned, these two towns represent an advance over Villefranche and Mariembourg, since van Noyen discarded the square shape for the inherently stronger pentagon (see text fig. C, and note 79 below).

60. Almost identical plans appear in the treatises of Castriotto (*Della fortificazione . . .*, p. 48) and Bellucci (*Nova invenzione . . .*, p. 63) (Fig. 19), which were published in 1564 and 1598 respectively, although both were written much earlier (see notes 49 and 68). Lavedan (*Urbanisme*, II, p. 83) is guilty of an anachronism when he writes, in reference to Marini's plan for Villefranche-sur-Meuse: "Il applique, sans rien y changer, le schéma que Girolamo Maggi avait donné vingt ans plus tôt." While the exact date of Maggi's birth is uncertain, it is believed to have fallen around 1523, which would have made him about two years old in 1525, twenty years before the foundation of Villefranche. Maggi did not begin to write his treatise until around 1550 and did not pub-

Its derivation must remain a matter of speculation at this time, since not enough is known of the early life of its author, Marini. The possibility that it was the independent product of Marini's brain cannot be ruled out entirely, but more probably its origin should be thought of in the context of the epochal conferences of military architects which took place in Rome during the time of Paul III. A definite link between the two events is lacking at this time, but the time element certainly suggests such a connection.

Nothing is known of Marini's life prior to 1537. He worked in Piedmont between 1537 and 1542 and afterwards seems to have lived and worked continuously in France. By 1542, Marini had established a firm reputation which permitted Blaise de Monluc to refer to him as the greatest siege engineer and military architect in Italy.[61] Had he been in Rome after 1537, it seems certain that contemporary documents and accounts dealing with the Roman events would have mentioned his name along with those of other famed military architects. It is not impossible, however, that he was in Rome prior to 1537, when he was still a young man and unknown in his field. Such a supposition is supported by the fact that Francesco de Marchi mentions him as a friend of Antonio da Sangallo the Younger, whom he could have met only in Rome.[62] But even if Marini had never been in Rome, the news of the momentous events there certainly must have reached him wherever he was, transmitted through one or several of the lesser engineers who, along with the great masters of their profession, were attracted to Rome by the glittering promise of fame and success offered through participation in one of the greatest fortification projects of the age.[63]

At the time of Paul III's accession to the papacy in 1534, Rome still depended largely on the old Aurelian walls for its defense. In August 1534, a large Turkish fleet anchored in the Tiber estuary for the purpose of replenishing its sweet water supply. Although the fleet made no hostile moves, its mere presence constituted a potential threat of such magnitude that Rome was deeply impressed by the city's needs for more adequate defenses. Within a few weeks after his election, Pope Paul III invited a number of Italy's outstanding soldiers and military architects to Rome for a series of conferences on the best possible methods of fortifying the city. These conferences continued, more or less frequently, for the duration of Paul III's pontificate and, at one time or another, practically all of Italy's more important military architects seem to have participated in the discussions. Among the names mentioned in official records and contemporary accounts are those of Alessandro Vitelli, Sforza Pallavicino, Gianfrancesco Montemellino, Giulio Orsini, and Mario Savorgnano, all men of culture and learning with outstanding military backgrounds. Among the professional architects and engineers, one finds the names of Michelangelo, Antonio da Sangallo the Younger, Giovanni Mangone, Francesco de Marchi, Giacopo Meleghino, Giacomo Castriotto, Galasso Alghisi, and Francesco Laparelli.

The result of the early councils in 1534 was the decision to ring the entire city with a belt of eighteen powerful bastions which, by reducing the city's circumference by about one half,

lish it until 1564, after combining it with Castriotto's work. The plan of the Villefranche type in the Maggi-Castriotto treatise is almost certainly by Castriotto, and not by Maggi. Castriotto could have conceived this plan, not twenty years before Villefranche, but sometime during his stay in Rome, possibly as early as 1542 (see note 68 below).

61. Cf. Paul Courteault, *Commentaires de Blaise de Monluc*, Paris, 1911, I, pp. 129-130.

62. Carlo Promis (*M.s.i.*, IV, 1863, p. 625) believes that Marini was in Rome for the convention of military architects in 1542. This appears unlikely, however, since these deliberations seem to have taken place during the latter part of the year (cf. Guglielmotti, *Fortificazioni*, pp. 329f.), at a time when Marini was taking part in the siege of Perpignan (cf. Courteault, *loc.cit.*).

63. The following data on the fortification projects for Rome under Paul III are based primarily on Guglielmotti (*Fortificazioni*, pp. 305-385) whose account of the events appears to be both complete and accurate. L. von Pastor (*Storia dei Papi*, ed. A. Mercati, Rome, 1924) and E. Rocchi (*Le piante iconografiche e prospettiche di Roma del secolo XVI*, Rome, 1902) seem to have derived most of their information on the history of Roman fortification from Guglielmotti. Rocchi's corrections of Guglielmotti's account are of a minor nature. He dates the Bastione Sangallo 1537-1542, as compared to Guglielmotti's dating of 1535-1542. Rocchi is noncommittal concerning the authorship of the Bastione Belvedere, but implies that it was built by Michelangelo after Sangallo's designs (pp. 278-280).

could be built at 500-meter intervals. The designs for this fortification system were furnished by Sangallo, who also became the over-all director of the project. Work was begun in 1535 with two bastions, the "Colonella" on the Aventine hill and the "Antoniana" (today Bastione Sangallo) near the Porta Ardeatina. By 1542 only the latter had been fully completed, at the cost of 44,000 ducats. The tremendous cost and time expended for this bastion's construction forced the Pope to realize that his original plan to fortify the entire city had been overly ambitious. Accordingly, he called in his architects for another series of conferences in order to modify the original plans. On hand for this second round of conferences were Michelangelo, Sangallo, Alghisi, Castriotto, Vitelli, Montemellino, and Meleghino. It was decided to abandon the works on the left side of the Tiber and to concentrate all efforts on the right bank, particularly the Borgo. After lengthy deliberations, work was begun in April 1543, again under the direction of Antonio da Sangallo. Operations came to a temporary halt in 1545, due to differences of opinion between Sangallo and Michelangelo, but Sangallo remained in charge of the project until his death in 1546. He was succeeded by Michelangelo who, nominally, worked under the supervision of the courtier and political opportunist Meleghino, but who, actually, was in full charge of all construction work for the Bastione Belvedere. Upon completion of this bastion, Michelangelo retired from the project and was succeeded by Castriotto, who continued to work on the Borgo's fortifications until the death of Paul III put a temporary halt to the project in 1549. It was resumed only in 1561, under Pius IV, this time under the direction of Francesco Laparelli.

The significance of these Roman events for the development of military architecture can hardly be overestimated. The great importance which contemporaries attached to them can be recognized in the numerous references to them in practically all of the treatises on military architecture of the following half century.[64] And indeed, the assumption seems safe that the cross-fertilization of the most nimble brains in the profession during a decade and a half of periodic deliberations must have produced many basic discoveries and theories which became fundamental to later planning.[65] Just how stimulating the Roman atmosphere of that time was to young military architects can be inferred from the facts that Alghisi claims to have made the invention for his system of fortification there;[66] that Francesco de Marchi began to write his treatise at that time;[67] and that Castriotto probably wrote his book on military architecture while he worked for Paul III in Rome.[68] Also, the Roman events of that time may well have been responsible for Bellucci's

64. Memories of the Roman projects lasted into the 17th century and are still referred to by Scamozzi (*Dell'idea della architettura universale*, Venice, 1615, II, ch. 28).

65. How lively the interchange of ideas was at this time may be deduced from Alghisi's charge of plagiarism against Castriotto (see note 54 above).

66. Galasso Alghisi, *Delle fortificationi . . .*, I, chap. 9. For Alghisi's life, the dates of which are uncertain, cf. Promis, *M.s.i.*, XIV, 1874, pp. 186-190. As military theoretician, Alghisi considered the design of fortifications purely as a geometrical problem. His treatise, which is one of the most beautifully printed of the 16th century, presents eighteen versions of his basic shape, i.e. the star with bastionated points (Fig. 16). Concerned only with fortification rings for cities of various sizes, Alghisi does not make a single reference to their interior street plans.

67. Francesco de Marchi (1504-1576) was born in Bologna, worked as military engineer in Tuscany, Rome and, for several years, in the Low Countries (cf. Luigi Marini, *Francesco de Marchi, Architettura militare*, Rome, 1810, I, pt. 1, Notizie della vita e delle opere del capitano Francesco de Marchi, pp. 1-27; also Promis, *M.s.i.*, IV, 1863, pp. 632-669). According to De Marchi's own testimony, he seems to have been in Rome as early as 1535, since he claims to have assisted in the initial work for the Bastione Sangallo (F. de Marchi, *Architettura militare*, I, ch. 39: "Ajutai a tirare li fili di detto bellovardo nel principio del ponteficato di Paolo III . . ."). Francesco began to work on his treatise while he was in Rome and, although he did not complete it until after 1565, he claims to have had most of the work finished by 1545 (*ibid.*, Introduction to Book 3). For additional information on the treatise, see note 101 below.

68. Jacomo (Giacopo) Fusto Castriotto (ca. 1510-1563) studied architecture under Girolamo Genga. As military engineer, he worked in Naples (1540-1542) and Rome (ca. 1542-1549). In 1552 he went to France, where he rose to the rank of General Superintendent of Fortresses of the Kingdom. For his *vita*, cf. Promis, *M.s.i.*, IV, 1863, pp. 295-311.

Promis does not attempt to date Castriotto's treatise on military architecture. It seems, however, that it must have been written prior to 1552 and quite possibly before 1549. Castriotto's treatise was published posthumously by his friend Girolamo Maggi, whom he met either in Rome (Promis, *op.cit.*, p. 309) or more probably in Tuscany during the Sienese war. On one or the other of these occasions, Castriotto must have turned his manuscript over to Maggi, as he left for France in 1552 and never seems to have returned to Italy thereafter. Traveling almost constantly and burdened with numerous commissions after he left Rome, it seems most likely that Castriotto wrote and finished his treatise while he was still in that city. It was published under the title of *Della fortificatione delle città, di M. Girolamo Maggi, e del capitan*

decision to specialize in military engineering, once his father-in-law, Girolamo Genga, had interested him in architecture.

Alghisi, Bellucci, Castriotto, and De Marchi all began their careers in Rome between 1534 and 1548 and became outstanding military architects and theorists whose writings influenced all later military architecture. The work of the latter three particularly represents a milestone and turning-point in the evolution of both military architecture and the radial city plan. Curiously, the written works of all three men were published posthumously; but there can be little doubt that most, if not all, of their plans and ideas were first formed during their apprenticeship in Rome under the stimulating influence of the greatest soldiers and architects of their time. There are other parallels in the lives and works of these three men. They all worked in foreign countries at one time or another; and they were all soldier-architects who believed in the practical planning of fortifications, as opposed to the purely abstract and geometric approach of Alghisi. But above all, they were the first theoreticians who published and popularized the radial city plan as an integral part of their fortification systems. Their solutions in this respect are so similar that any assumption of their having arrived at them independently goes beyond the realm of coincidence. The obvious alternative is that all three men must have derived their theories from a common source which, in this case, can only be found in the Rome of Paul III. The matter-of-fact manner in which all three authors present their radial plans suggests that none of them felt himself to be its inventor. The plans are brought before the public as though the advantages of the radial scheme were already well known and undeserving of any special emphasis. Such an attitude, at a time when intellectual property was jealously guarded, particularly by military architects, seems best explained by the assumption that all three writers were conscious of the fact that they were publishing a product that was the result of a gradual process of rationalization by many minds and that their knowledge of it was shared by others.

The link with earlier radial plans is furnished by Antonio da Sangallo the Younger, the Dean of the military architects who convened in Rome. We know that Antonio himself had shown an occasional interest in the potential of the radial plan for fortifications. He also may have imparted his knowledge of Francesco di Giorgio's radial designs to his fellow engineers during the course of one or more of their frequent conferences. Under the critical eyes of so many ingenious men, stimulated by discussion, the obvious advantages which the radial scheme offered to their new system of fortification could hardly have been overlooked. Since only a few years later it is reported simultaneously as a *fait accompli* by three of the most important writers on fortification, the marriage of the radial plan to the new system of bastionated defenses must have occurred during the course of the Roman conferences between 1534 and 1545. The year 1545 appears to be the terminal date, since it is the year in which De Marchi claims to have finished most of his treatise, and also the year when the combination was put to its first practical test in France

Iacomo Castriotto, ingegniero del Christianiss. Re di Francia, libri III, Venice, 1564.

Though the work was a joint publication, the credit for it is usually mistakenly given to Girolamo Maggi. To prevent a perpetuation of this error and to clarify the matter, a brief note should be sufficient.

Girolamo Maggi (ca. 1523-1572) was a humanistic scholar by inclination and a lawyer by profession. For his *vita*, cf. *Biografia universale antica e moderna*, Venice, 1827, XXXIV; and Promis, *M.s.i.*, I, 1862, pp. 105-144. Maggi was a prolific writer on a number of subjects, ranging from archaeology to jurisprudence. Military architecture was only one of his varied interests. It seems that he projected an independent work on fortification, of which he completed the first part in 1553, but later he abandoned his original plan for the book and decided to combine his work with Castriotto's treatise, perhaps in the realization that he could not really match the latter's knowledge in this particular field. Maggi's experience in military matters was limited, although he is said to have worked on the fortifications of his home town of Anghieri and later, during the siege of Famagosta, is reputed to have helped the defenders with many ingenious inventions. In *Della fortificatione delle città*, Maggi has kept his own writing neatly separated from that of Castriotto. A few of the chapters which deal with the more general aspects of the subject are written by Maggi himself, but most of the chapters which deal with technical problems begin with Castriotto's expert treatment and then are liberally documented by Maggi with frequent references to classical authors. The general effect of the work is that of a treatise by Castriotto which has been richly annotated with commentaries by Maggi. There can be little doubt that Castriotto is responsible for most, if not all, of the plans and designs in the work.

with Marini's plan for Villefranche-sur-Meuse. The simultaneity of events strongly points toward a connection between them, although demonstrable proof is lacking at this time.

Fusion of the Radial Plan with Bastionated Defenses

The military radial plan of the second half of the sixteeenth century is, at most, only a distant relative of that of the earlier urban planners. Filarete, Francesco di Giorgio, the interpreters of Vitruvius and architects of the Bramante circle, all had approached the problem from the civilian's point of view. To them the radial plan presented itself as the ideal vehicle for the fusion of aesthetic with practical urban demands. Designed for civilian traffic and circulation needs, the plans by these architects expressed the straight and unobstructed link between city gate and central piazza as one of the most desirable features. The military planner, on the other hand, started from an entirely different set of premises. To him the most important feature of a city's plan was its ring of fortifications, to which everything else, including civilian convenience, was subordinated. The circumference determined the town's interior structure.

For a full understanding of the military planner's approach to city planning, it becomes necessary to cast at least a fleeting glance at the rules according to which sixteenth century fortification belts were designed. Francesco di Giorgio had already stated the basic rule: the larger the circumference of a city, the more angles does its shape require. The refinement of this theorem and its reduction to permanent numerical values became the prime task of his followers. The first and most important consideration was to establish an ideal distance from bastion to bastion. This depended on the type and range of artillery which was to be used for the defense of the fortress. Ordnance was divided into heavy ("reale") and light ("non reale") artillery, depending on its range and the size of the shot fired.[69] Accordingly, fortifications also were referred to as "reale" and "non reale." Of these only the former need concern us, since the smaller dimensions of the "fortezza non reale" normally were used only for small citadels or temporary field fortifications.

The ideal distance from bastion to bastion varied according to the views and opinions of individual designers. Some engineers held that this distance should be great enough to prevent the two opposing flanks from damaging each other when they were firing parallel to the curtain.[70] Others, and they seem to have been in the majority, believed that the batteries of a flank should be able to protect not only the adjacent curtain, but also the entire face of the opposite bastion, as well as the ditch beyond it.[71] The average distance from flank to flank recommended by these latter theorists seems to have ranged between 260 and 350 meters.[72] The advocates of these and

69. Bellucci, (*Nova invenzione* . . . , ch. 3), gives the average range of a heavy cannon as 600-700 Florentine *braccia*, that of a light cannon as 300-400 *braccia* (one *braccio* equals 58 cm), or about 400 and 200 meters respectively. De Marchi (*Architettura militare*, IV, ch. 8) quotes approximately the same distances but points out that the actual range is subject to many variables, such as the fit of the ball, the quality of the powder, humidity, etc. The ranges which are generally quoted by 16th century authors are those of point-blank, horizontal fire (*tiro di punto bianco*). It was well recognized that, up to 45 degrees, elevation will produce greater ranges, but at a great loss of striking power. The effect aimed for, particularly by siege weapons, was the concussive power which the solid ball produced upon impact. This was believed to be greatest during the second third of its flat trajectory, as the first third was thought to produce acceleration, while the last third was spent in deceleration, due to air resistance (cf. Domenico Mora, *Tre quesiti in dialogo sopra il fare batterie* . . . , Venice, 1567, Quesito primo, pp. 4-10).

70. Mora (*op.cit.*, Quesito secondo, pp. 25-52), for instance, believes that 150 paces, which he quotes as though it were the accepted standard of his time, is much too short. He wants his curtains to be about 350 paces long and to have their centers strengthened by cavaliers. While there is some doubt as to the measuring units used by some authors, the majority seems to employ the Florentine *braccio* (58 cm) and the Venetian *passo* (ca. 175 cm). The Venetian *passo*, which measured five *piedi*, is to be distinguished from the Florentine *passo andante* of only two *piedi*. Another frequently used measuring unit is the *canna*, which equals four Florentine *braccia* (2.32 m).

71. Giacomo Lanteri (*Due dialoghi . . . del modo di disegnare le piante delle fortezze secondo Euclide*, Venice, 1557, Dialogo secondo) wants only about 100 paces between flanks, or about 140 paces for the "length of defenses," as he believes that the curtains should be defended by light as well as heavy artillery. Sixteenth century engineers used two methods to determine the ideal distance from bastion to bastion. One of these was the length of the curtain from flank to flank. The other measured the distance from one flank to the tip of the neighboring bastion. If this latter distance was used, it was generally referred to as the "length of defenses" (*lunghezza delle difese*).

72. Alghisi (*Delle fortificationi libri tre*, II, ch. 2) works

shorter distances contended that, in those cases when flanks had to shoot parallel to a curtain to seal off a breach, grapeshot and chains would be used which could not damage the opposite flank. Whatever the individual's private opinion, once he had established the ideal length of the curtain, this distance served as the basic unit of measurement for the remainder of the fortress plan. Depending on the area to be fortified, this unit could be multiplied at will, creating many-sided polygons in which each additional side added to the space enclosed.[73] Beginning with the square, the number of sides of the basic figure could be increased to the point at which the polygon approached the shape of a circle.

To many sixteenth century planners, the circle was the ideal figure to be fortified. But the military architect was an exceedingly practical man and his appreciation of the circle was based exclusively on its functional advantages, untinged by any philosophical cogitation on its symbolic qualities. A rare exception was Giacomo Lanteri, who described the circle as the perfect figure because it reflected the shape and nature of the universe.[74] To the great majority of the military planners, the circle merely represented that geometric figure which permitted the design of blunt bastions and which, for a given circumference, enclosed the greatest interior space.[75] Although the circle was the expressed ideal and represented the inherently strongest geometric shape, circular plans, however, were shown very rarely by sixteenth century theorists, and the Bellucci plan of this type must be considered an exception (Fig. 17). The reason for this apparent discrepancy between theory and practice can be found in the planner's insistence that the curtains between two bastions be straight, as only the straight curtain permitted efficient defense by the flanks.[76] Some designers, like Alghisi and Castriotto, experimented with angled curtains, but these were always bent inward toward the fort's center, so that the bastions could always be in full sight of each other (Figs. 16 and 20). This type of bent curtain, and the resultant starshaped circumference, met with much criticism, however, as most planners agreed that the straight curtain was not only the strongest, but also the cheapest to build.[77]

A second factor which entered into and determined the design of a fortress was the shape of the bastion proper. The designer's aim was to keep its point as blunt as possible. An acute leading angle was considered impractical because it not only restricted the bastion's interior space, but also because its sharp point was easily ruined by enemy fire.[78] Unfortunately, it was not always possible to combine a blunt-nosed bastion with the ideal curtain length, and it became the designer's

with a length of defenses which varies between 150 and 200 paces. Pietro Cataneo (*I quattro primi libri . . .*, I, ch. 10) wants this same distance to measure between 80 and 130 *canne*. Girolamo Cataneo (*Libro nuovo di fortificare, offendere, et diffendere*, Brescia, 1567, ch. 2) prescribes a curtain length of about 150 paces. De Marchi (*Architettura militare*, I, ch. 56), like Mora, works with long curtains and recommends 300 paces for them.

73. Bonaiuto Lorini, *Le fortificationi di B. Lorini*, Venice, 1596, I, ch. 12 (quotation is from the 1609 edition): "Con la dimostratione d'un solo baluardo . . . si potrà comprendere tutto il corpo della Fortezza; perche ordinariamente ella non è altro, che una quantità di baluardi, accomodati con tal' ordine, che l'uno possa difendere l'altro." Also Bellucci, *op. cit.*, ch. 27: "E volendo la città che circondasse un miglio e mezzo, o doi terzi si potria far di cinque lati perfettamente, e volendo che girasse due miglia in circa si farà di sei lati; e volendole di due miglia e un terzo si farà di sette facie, e di otto facie girera due miglia e mezzo, et a questo modo accresciendo le figure di piu lati, verranno piu capaci e piu forti. . . ."

74. Lanteri (*op.cit.*, Dialogo primo, pp. 27-28), after stating the military advantages of a circular fortress, writes: "Oltre di ciò (come vogliono i Filosofi) era di mestiero, che il mondo havesse una forma simile al mondo archetipo, quale era la idea della divina sapientia, primo che questo creasse che no vediamo; onde non essendo in Dio principio ne fine, convenevole cosa era, che il cielo parimente havesse una forma senza principio e senza fine, quale è la forma circolare. La onde dico che (al parer mio) tutte le fortezze, ò città che più s'avicinano a questa forma nel recinto delle muraglie loro siano più perfettamente forti, che quelle che le si discostano, come e la quadrangulare. . . ."

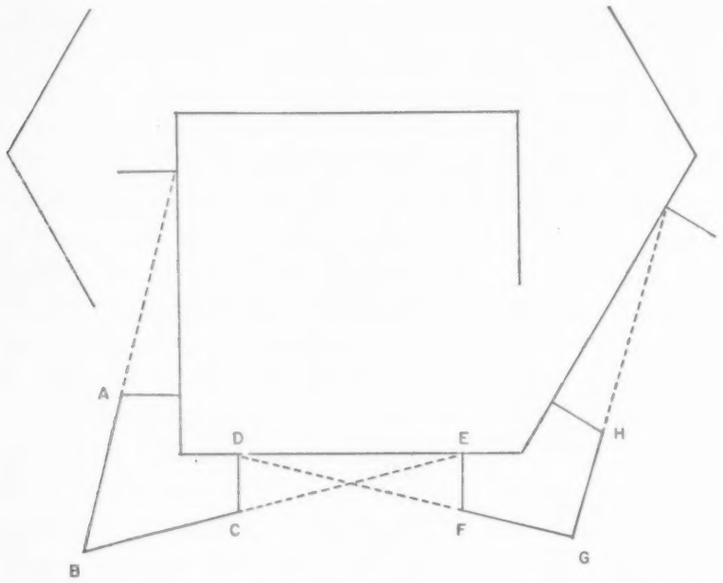
75. Antonio Lupicini (*Architettura militare*, Florence, 1582, ch. 1, p. 14) may serve as spokesman for the great majority: ". . . che più si accosta a la circolare (i.e. the form of a fortress) sia la più perfetta per essere figura più capace che l'altre, e perche gli angoli di baluardi vengano più ottusi. . . ."

76. De Marchi, *op.cit.*, I, ch. 27: "Alcune città avevano la figura circolare, come fu Gerusalemme, secondo che scrive Tacito. Questa figura vien lodata perchè rende la città più spaziosa; ma secondo lo stilo moderno il recinto della fortezza deve avere gli angoli, e da un angolo all'altro andare le mura per linea retta. . . ."

77. Cf. Busca, *Dell'architettura militare*, ch. 44; Girolamo Cataneo, *op.cit.*, ch. 2.

78. Lupicini, *loc.cit.*: ". . . perche gli angoli di baluardi vengano più ottusi, i quali così ottusi cagionano molta sicurtà alla muraglia, e danno più capacità di piazza nel baluardo che non fanno gli angoli acuti."

task to arrive at an acceptable compromise between these two most desirable features. The fewer angles the basic shape of the fortress had, the more difficult became the solution (text fig. C).[79] For this reason, the square was generally condemned as one of the geometric figures which lent itself least to fortification.[80] Still, almost all of the treatises on military architecture brought at



C. Construction of bastions for a square and a hexagon with equal sides. Flanks and curtains also being equal, the resultant less acute angle FGH was preferred to ABC by sixteenth century military architects.

least one example of a fortified square, since it represented the smallest and, therefore, cheapest fortress which could be built (Fig. 18). But even for small fortresses the pentagon was greatly preferred, while polygons of from seven to twelve sides were usually considered best for larger enclosures.

The perfect fortification belt envisioned by the sixteenth century military architect, then, was a regular polygon with blunt, evenly spaced bastions and predetermined curtain lengths, which could be surrounded with an impenetrable wall of defensive fire created by tightly interlacing firelanes. However, it was also generally recognized that the design of such a fortress depended to a large extent upon the nature of the site for which it was planned, and that the ideal plan could be executed only on a flat, open plain which was unmarred by natural impediments.[81]

79. The usual method of designing the plan of a bastion began with the drawing of its two flanks at right angles to the curtain. After establishing the desired length of the bastion sides (usually three times the length of the flank), lines were drawn from their terminal points to the interior angles of the neighboring bastions, i.e. the points where the flanks of these bastions joined the curtain. By drawing these two lines out to their point of intersection, the bastion's outside faces were established (see text figs. A and C). Since the length of the flank was more or less invariable (it had to accommodate at least two guns and their crews side by side), the bastion's leading angle was determined either by the length of the curtain, or by the basic shape of the figure to which the bastion was to be attached. Since the curtain length also was a permanent value to the designer, best results could be obtained by altering the basic shape of the fortress. It was found that multi-sided polygons yielded the most nearly perfect results (see text fig. C). If fortress shape or curtain length permitted it, some military architects preferred to draw their bastion faces from some point along the curtain, located between mid-curtain and the neighboring flank. Thus did Lorini, who hoped that in this manner part of the curtain could participate in the defense of the bastion (see text fig. B). De Marchi also proceeded in this manner on many of his plans.

80. De Marchi, *op.cit.*, I, ch. 38: "Della figura quadrata si servirono gli Antichi . . . ora poi che co'tiri di artiglieria devonsi difendere le mura, conviene escludere la figura quadrata poichè o si faranno . . . i bastioni . . . troppo acuti, e fuori di proporzione." Also Bellucci, *op.cit.*, ch. 27: "Il quadro ancor lui ha bella forma, breve, e di meno spesa, e di poca guardia, ma li sui baluardi bisogna sieno acuti, e che per questo haveranno dentro poco spatio, et anco meglio so potranno offendere."

81. De Marchi, *op.cit.*, I, ch. 23: "Prima di stabilire una fortezza bisogna avvertire, se il sito dovrà ubbidire all'arte, o l'arte al sito, passando fra questi due casi gran differenza. In quei siti ne' quali le risorse dell'arte non vengano circoscritte della natura, so possono eseguire cose belle ed ingegnose, somigliando questi a un foglio di carta, ove si può scrivere e disegnare tutto ciò che si vuole. Sarà peraltro degno

The importance which planners attached to this problem is amply reflected in the fact that, beginning with Alberti's, practically all treatises devote one or more chapters to the natural demands of the site. The question usually was dealt with as a two-fold problem, of which the first part was concerned with methods of adjusting a design to an unfavorable site, and the second with the description of what each designer considered to be the ideal site for his ideal plan. The question of the potential strength and advantages of hilly versus flat sites remained an unsolved subject for debate to the end of the century. Castriotto believed that mountainous sites were stronger.[82] De Marchi was undecided, but also seemed to favor the mountains,[83] while Alghisi was a strong advocate of flat and open sites.[84] Busca devoted nine full chapters to the problem, only to decide that a final choice between the two was most difficult.[85] On one point, at least, there was general agreement, namely that a flat and open site offered the designer the best opportunity for developing his plan to its greatest perfection and that the disadvantages the site might have could be offset by the inherently greater strength of a symmetrically designed fortification belt.[86] It was primarily for this reason that the sixteenth century military architect chose the open plain as the ideal site for his fortifications.[87]

But even under conditions that were not ideal, the bastion had been developed into so powerful a defensive weapon that, by the middle of the century, the curtains had become almost impregnable. While the walls could still be breached, the withering cross-fire from the two flanking bastions made any assault upon the breach suicidal. As a result the attackers began to shift their offensive efforts towards the bastions themselves, which had become the least heavily protected parts of the defensive system.[88] This, coupled with the fact that, during a siege, the enemy's operations usually were directed only against one or two bastions at a time, made it imperative that these most vulnerable points of the fortification system be linked with the interior of the fortress by means of wide traffic arteries, along which they could be provisioned and reinforced as needed.

The bastion was not only the most vulnerable part of a city's defenses, but also its potentially most powerful offensive weapon. Its triangular platform served the dual purpose of protecting the flanks and of being the base of operations from which the defenders attempted to disrupt the enemy's assault preparations. Once the enemy's direction of attack was evident, it became necessary to supply the endangered bastion with all available artillery, as the besieged would attempt

di maggior lode quell'Ingegnere, che si saprà adattare a un luogo irregolare."

82. Maggi-Castriotto, *op.cit.*, I, ch. 15.

83. De Marchi, *op.cit.*, I, chs. 5 and 6. He writes that an open, flat site has many advantages, as the defenses can be spread out and built more strongly and the entire fortress can be better proportioned, but, "ognuno sa, che ne' monti l'aria è sempre più pura, la veduta più bella, e gli uomini più robusti."

84. Alghisi, *op.cit.*, I, Proemio.

85. Busca, *op.cit.*, chs. 16-24.

86. Alghisi (*loc.cit.*) is particularly emphatic on this point, since his entire system of fortification depends on his ability to develop his purely geometric designs to their fullest extent. Together with Lanteri, he is the outstanding exponent of a group of designers who treated military architecture as a branch of the mathematical sciences. More numerous, as well as more influential on later planners, were the practical military architects, like Castriotto, Lupicini, Bellucci, and De Marchi. The practitioners' point of view is summarized by Bellucci (*op.cit.*, p. 88): ". . . sopra una carta l'huomo può far quello che vuole, et io farò cose sopra una carta che saranno molte lodate, e di sorte, che mai si potranno metter in effetto, perche il dissegno inganna, ed può mostrar il falso, però il dissegnar non è il primo importante vero è che è necessario. . . ." Cf. also De Marchi in note 81 above.

87. Lavedan (*Urbanisme*, II, p. 77) writes that flat, marshy sites were preferred over hilly terrain because they impeded the enemy's movement, particularly that of his artillery. This may have been true in the Low Countries, where the entire countryside around a fortress could be flooded, but Italian theoreticians seldom recommended a marshy site. Ever since Alberti, Italian planners had been very conscious of the health factors involved in the choice of a site and a marshy one would hardly have met their standards. Cf. Busca (*op.cit.*, ch. 19), who admits that marshy sites are strong defensively, but adds that they also are very unhealthy. In addition to the reasons already stated, the following advantages were most frequently quoted for a flat over a mountainous site: 1) the attacking forces were always in full sight of the defenders; 2) the defenders could inflict heavier losses on the enemy with horizontal fire; 3) the fortress could be supplied better; and above all, 4) the fortress could be relieved more easily in case of a siege, as mountain strongholds were easy to blockade (cf. Alghisi, *loc. cit.*; Busca, *loc.cit.*; Carlo Theti, *Discorsi di fortificationi*, Rome, 1569, fol. 3r).

88. Cf. E. Viollet-le-Duc, *An Essay on Military Architecture in the Middle Ages*, Eng. tr. McDermott, London, 1860, for many illustrations of 16th century siege methods. Also Max Jaehns, *Handbuch einer Geschichte des Kriegswesens*, Munich, 1888, II, pp. 1191f. and 1224f.

to match the fire power of the attacking forces. Some cities owned up to 200 cannon, according to De Marchi, but what good are 200 cannon, he writes, if they cannot be brought to bear on the enemy?[89] The shifting of artillery from bastion to bastion must indeed have presented a problem of first magnitude, as it involved the movement, by primitive means, of pieces weighing up to 15,000 pounds.[90] This called for access roads to the bastions which were not only straight and wide, but which also had manageable slopes, such as are shown on the Maggi-Castriotto perspective plan (Fig. 21).

Most of these traffic and supply problems found their solution in the military radial plan, which provided the fortress with an efficient system of interior communications by connecting each of its bastions with the town's center. The central piazza became at once the mustering point and the dispersal center for the city's military strength which could be channeled to the key points of its defensive system along straight and unimpeded access roads.[91] The radial plan had an additional advantage; each bastion could be seen from the central piazza and a commander stationed on a tower or raised platform in its center was in complete control of the city's defenses, able to shift his forces at will and according to need.[92]

The fusion of the radial city plan with the modern system of fortification was the result of uncompromising logic. Since the bastions were the keys to the city's defenses, it was toward these that the traffic system had to be oriented and not toward the gates. Thus, the street system became the end result of adjusting the number of these feeder roads to the number of bastions which fringed the city. By linking the bastions to the central piazza, the military planner ignored civilian traffic requirements and his new radial plan became the result of and an adjunct to the design of the city's fortification belt.

The Military Engineer as Urban Planner

Most military architects showed small concern for the needs of the civilian populations that were to inhabit their fortress cities. To most of these planners, the civilian inhabitants of a city represented no more than a manpower pool from which the garrison could draw additional defenders in case of need. According to this point of view, large cities were stronger than small ones, as a more numerous population could furnish a greater number of defenders.[93]

A civilian population which was considered to be merely an adjunct to the city's military garrison did not require any particular consideration. Accordingly, we find that few, if any, concessions are made by the military planner to civilian convenience and comfort. Most treatises, while presenting designs of defensive belts intended to ring large cities, do not show their interior layouts. Those that do make few allowances for civilian needs. Elements which had been of major concern to men like Alberti, Filarete, and Francesco di Giorgio, such as churches, public buildings, and market places, are seldom shown on these plans, and even less frequently referred to in the accompanying texts.

Lupicini goes further than most by showing on his plan a large church situated off the central piazza (Fig. 19). Placed in line with the city's two gates, this building introduces the element of axial alignment into the radial plan. The author, however, has practically nothing to say about

89. De Marchi, *Architettura militare*, III, ch. 147.

90. *Ibid.*, IV, ch. 18, where De Marchi quotes the weight of a *canone* which fires a 100-pound ball as being 14,300 pounds; a *columbrina* of the same caliber, but with a longer barrel, weighed 15,600 pounds.

91. *Ibid.*, III, ch. 72: ". . . sarà facil cosa il dar soccorso à tutte le parti della fortezza, da quelli che saranno in battaglia nel centro à quella parte dove sarà più necessario." Also *ibid.*, III, ch. 158: "Gli ho dissegnato le strade che partono della piazza e vanno per il dritto alli bellovardi, e per più utile e bellezza le faccio dritte, a tale si possa condurre l'arteglieria più facilmente per tutto alli luochi necessarii."

92. Maggi-Castriotto, *Della fortificatione delle città*, I, ch. 10: ". . . e come stando uno nella tribuna ed altezza che è nel mezzo (i.e. of the piazza), vede par ogni strada tutti i Balluardi, a' quali puo mandar aiuto, quando facesse bisogno." Also, Lorini, *Le fortificationi . . .*, I, ch. 20, where the same advantage is described in almost identical words.

93. Busca, *Della architettura militare*, ch. 25.

the interior plan, stating only that it has been laid out "as it is done in modern fortification."[94] Bellucci describes the advantages of his favorite round plan purely in military terms (Fig. 16). The circular circumference, he writes, renders the interior very spacious and, due to the radial interior layout, the large and obtuse bastions are all in full view of each other, which renders the design perfect from within as well as without.[95]

Many of the plans do not even concede the inhabitants the right of easy access to their town, as the gates are offset from the main traffic system and hidden in the shadows of protecting bastions. The gates on Bellucci's plan are designed more as means of effecting sorties during a siege than as peacetime traffic channels. The gates on the Maggi-Castriotto plan are treated as traffic traps rather than means of entry, and their placement is justified with the explanation that they should be placed close enough to the bastions so that from these they can be defended by hand weapons (Figs. 20 and 21).[96] In fact, although this is not shown on the plan, Maggi revives Alberti's old argument that narrow and winding streets can be more easily defended against an intruding enemy than wide and straight ones. Accordingly, he recommends that the streets in the neighborhood of the gates should be narrow and winding.[97] Concerning the other aspects of this plan, the author, this time Castriotto, merely writes that it is oriented toward the eight winds, so that the inhabitants can accommodate themselves according to their needs and so that each of them has his street leading toward the central piazza.[98] This is about the extent to which Lorini goes into the question of a city's interior plan and represents the limits to which most sixteenth century treatises deal with the subject.[99]

The entire voluminous sixteenth century literature on military architecture in Italy presents only two authors who have anything significant to say about the civilian aspects of their city plans, Francesco de Marchi and Pietro Cataneo. Of these, only the former enters into the close context of this paper. Cataneo, probably the most important writer on urbanism of the entire sixteenth century,[100] was more a civilian than military planner, and all his plans are of the checker-board type. De Marchi, however, was a staunch advocate of the radial plan, although not to the exclusion of other solutions.

De Marchi's general thoughts on city planning are found in scattered chapters of his first book.[101] Drawing heavily from Alberti and Francesco di Giorgio, with a few direct references

94. Lupicini, *Architettura militare*, I, ch. 1, p. 15.

95. Bellucci, *Nova inventioni* . . . , p. 70: ". . . oltra à questo guarda la porta benissimo, e la piattaforma che è dentro, e la raddoppia in modo che tal forma viene composa, e li baloardi grandi otusi, e sicuri, e vengono in vista l'un all'altro, e di dentro sempre se ne vedono, che è bonissima parte di una fortezza, che sii perfetta cosi dentro come fuori."

96. Maggi-Castriotto, *op.cit.*, I, ch. 8: ". . .[the portals] debbonsi far tanto vicine a' balluardi, che da quelli siano con gli archibugi da braccia difese."

97. *Loc.cit.*: "Non giudico, che sia util cosa disegnare le strade, che vadino diritte alla piazza, perche in case, che'l nemico passi dentro, se la strada sarà diritta egli più difficilmente sarà ritenuto, che non vada à pigliare la piazza, che non saria se detta strada havesse qualche piegamento." This same statement is repeated almost verbatim by Lorini (*op.cit.*, I, ch. 20). Similar recommendations had already been made by Alberti (*Della architettura*, tr. Cosimo Bartoli, Venice, 1565, IV, ch. 5). This approach was roundly criticized by Pietro Cataneo (*I quattro primi libri* . . . , I, ch. 6), who contended that, for the defense of a city, it would make little difference whether the streets were straight and wide or winding and narrow, because a defender who could not keep an enemy from entering the city would not be able to prevent its capture anyway.

98. Maggi-Castriotto, *op.cit.*, I, ch. 10.

99. Lorini, *loc.cit.*

100. This evaluation of Pietro Cataneo as an urbanist includes Palladio, who is generally referred to as the century's most significant writer on urban planning. The sections on city planning in both men's treatises are short, but they are nevertheless the most comprehensive statements made on the subject during the 16th century. A comparison of the two passages (i.e. Pietro Cataneo, *op.cit.*, I, ch. 6, pp. 9-13, and Andrea Palladio, *I quattro libri dell'architettura*, Venice, 1570, III, chs. 1, 2 and 16) will show that Palladio depended very heavily on Cataneo for his material on urbanism. He added practically nothing to what had already been published in the earlier work. While Palladio re-arranged and shortened Cataneo's material, he did not hesitate to copy the older man's sentences almost verbatim if they suited him. Although the respective publication dates may not be proof of Cataneo's priority, the fact that Palladio (*op.cit.*, I, ch. 13) referred to and lauded Cataneo's work strongly indicates that Cataneo's work was already in print and known to Palladio when the latter wrote his treatise.

101. The history of De Marchi's treatise is complex. According to Promis (*M.s.i.*, IV, 1863, pp. 660f.), it originally existed in three versions. The first of these consisted of only 30 plates and was printed in a very few copies during De Marchi's lifetime, probably in 1553 or 1554. The second version was in four books with 173 plates. Of this, the plates only were published by Gaspare dall'Oglio in 1597. This was followed by dall'Oglio's complete edition of text and plates in 1599. Finally, a third version of the treatise, which Promis believes to be a revision of the second, exists in a single manu-

to Vitruvius and other classical writers, De Marchi does not offer his readers anything startling in the way of independent thought or novel ideas. Nor does he make direct references to the radial plan in his first book. But within the framework of his preponderant interest in matters of fortification, De Marchi does show a genuine concern for the well-being of the civilian inhabitants who were to populate his fortresses and, therefore, as an urban planner, he stands head and shoulders above the majority of his less circumspect contemporaries.

De Marchi begins with the considerations that should determine the choice of a site for the newly planned city. First and foremost among these are a healthy climate and an ample supply of good fresh water. In addition, the country around the projected city should be fertile enough to enable it to support the urban population.[102] In accordance with the contemporary trend toward specialization, De Marchi delegates the responsibility for the planning of a town not to one man, but to a group of experts. This group includes a military engineer who determines the adequacy of the site from the military point of view. A doctor should be consulted on the quality of air, water, and fruit, an agriculturist on the fertility of the surrounding countryside, a mineralogist on the composition of the soil. An architect is needed to prepare the designs and supervise construction work. And finally, an astrologer should be asked to make the necessary calculations to determine the exact time when the work should be commenced, in order to assure the structure's permanence and the future happiness of the inhabitants.[103] Concerning the size of the projected city, De Marchi realizes that he is confronted with the planner's eternal dilemma, inasmuch as a city's population is not a static entity, but subject to unpredictable changes. Like Alberti, he would like to see the wall circuit planned large enough to allow for future population increases.[104]

As for the interior layout of the city, Francesco recommends that the major streets run straight from the gates to the main piazza, which is to be located in the city's center.[105] Along these main streets, at those points where they are intersected by minor transverse streets, small squares should be located which should be ornamented with churches, palaces, and fountains.[106] The Palazzo del Principe, as well as all major public buildings should be situated at or near the center of the town. Safe locations are to be found for the storage of artillery and munitions.

script copy in the National Library of Florence (formerly in the collection Magliabecchiana). Luigi Marini (*Francesco de Marchi, Architettura militare*, I, pt. 1, "Notizie . . . ," p. 23) doubts the authenticity of this third version, as he does not recognize De Marchi's hand among the several hands by which it is written. The 1599 dall'Oglio edition of the treatise is said to be extremely rare, although copies of it exist in the Vatican Library in Rome and the National Library in Florence. Luigi Marini's de luxe edition of the work, ballooned into six heavy volumes with notes, references and related historical essays, may serve as an adequate substitute for the study of De Marchi's text, which is presented in its original form (III, pt. 1) and in Marini's modern transcription (II, pt. 1). Marini's plates, however, bear little resemblance to De Marchi's originals. Marini felt that De Marchi's plates were little more than sketches which barely showed the basic essentials of his inventions. They were neither explicit nor instructive enough for the serious student (*ibid.*, Prefazione, pp. XXXIV-XXXVI), and so Marini decided to embellish them a bit, with disastrous results.

De Marchi's treatise represents the work of over two decades. According to his own statement, in the Introduction to Book III, "the major part of the work was in order in 1545." However, Francesco may be exaggerating a little, for Plate 1 of Book III is inscribed: "Questa opera si comincio dal Capitano Francesco de Marchi da Bologna Cittadin Romano del mese di agosto de l'anno mille cenque cento quarantasei, 1546, in Roma." Plate 150 is inscribed: "Di Brusselles adì 27 di settembre 1565. Francesco de Marchi da Bologna cittadino Romano: questo disegno, e discorso è al numero di cento cinquanta." There follow an additional 23 designs. A number of plans rendered in bird's-eye perspective show houses of northern type, indicating that they were done by a northern engraver, probably after 1559, although the basic plans may have been designed much earlier (cf. note 67 above).

102. De Marchi, *op.cit.*, I, ch. 15.

103. *Ibid.*, I, ch. 19.

104. *Ibid.*, I, ch. 27: ". . . conviene tenere la via di mezzo nello stabilire la grandezza delle città, ma quando mai si dovesse peccare di eccesso, si facciano piuttosto grandi che piccole, poichè oltri i molti vantaggi potrà il numero de'loro abitanti aumentarsi coll'ammettere i forastieri, senza che faccia bisogno d'ingrandirle, com'è accaduto in alcune città sì antiche, che moderne." This is one of several instances in which De Marchi follows Alberti very closely. Not only is he as noncommittal about the size of the city as is Alberti, but he even makes the identical reference to Aristotle, by comparing the city with a ship which should be built neither so large as to be unwieldy, nor so small as to be tossed about by light winds and small waves (cf. Alberti, *op.cit.*, IV, ch. 3).

105. De Marchi, *op.cit.*, I, ch. 30. This recommendation does not conform with many of De Marchi's actual designs, in which he follows the trends of pure military planning, by offsetting the gates from the main traffic system (see Figs. 23, 25 and 27).

106. *Loc.cit.* It is not quite clear whether De Marchi considered all crossroads as minor squares, as did Alberti (*op.cit.*, VIII, ch. 6), although his close dependence on the older man seems to make this likely.

Different sections of the town are to be assigned to the various trades, which should be distributed so that the "dirty" ones are located near the walls where they will not inconvenience anyone. Finally, De Marchi, like Alberti, makes allowances for the population's recreational needs by allocating sites to public baths and stadia ("i luoghi da far feste cosi a cavallo come a piedi").[107]

As for the general urban picture, De Marchi writes, obviously in direct reference to Alberti, that the ancients used to design their streets narrow and winding, imagining that they could defend them better against an enemy who had entered the city. In this manner they also tried to make their cities appear larger than they actually were and to protect their interiors against harmful winds and excessive heat.[108] However, he continues, today the streets in Italy are generally made wide and straight and "if one wants to flatter a friend by praising his house, one says of it that it is located on a long, straight and wide street and that it has a beautiful and spacious façade."[109] He refers to the street widening and straightening projects under Paul III in Rome which he witnessed and which he believes to express a universal aspiration of his time. Finally, before turning to military matters, De Marchi devotes a chapter to sanitation, in which he recommends a subterranean sewerage system to keep the streets clean and the air pure.[110]

While neither particularly brilliant nor original, this represents one of the most complete statements on urban planning of the sixteenth century. All the essential needs of a civilian population are considered by a thoughtful man who has studied earlier works on the subject to good advantage and has summarized them adequately.

An entirely different spirit speaks from De Marchi's third book, where the plodding reporter and chronicler suddenly turns into a most versatile and independent inventor. Here the reader is confronted with a bewildering variety of plans and schemes, ranging from the fanciful to the logical, the decorative to the utilitarian. Rectangular plans alternate with radial ones, hill towns with harbor cities, new foundations with schemes for the refortification of mediaeval towns. Admittedly, the greater part of De Marchi's effort is directed toward finding solutions to fortification problems posed by various sites and conditions, but, in addition to their military aspects, these plans reveal many insights into one of the approaches to sixteenth century urban planning.

De Marchi sets himself a series of hypothetical problems, for which he then tries to find the best possible solutions. Beginning with a given town site, such as on a winding river, on a peninsula jutting into the sea, or in a mountainous region, Francesco proceeds to fortify this site in the strongest possible manner and then to adjust the town's interior layout to its ring of fortifications. For every problem he presents at least two, usually more, possible solutions. Compare the two harbor cities (Figs. 22 and 23), one a regular, 12-sided polygon with a rectangular harbor located outside its circumference, the other an octagon enclosing a circular port; the former almost fantastic in its elaborately decorative quality, the latter plain and starkly functional. The great variety of De Marchi's solutions for similar situations can be well illustrated by two of his designs for river towns (Figs. 24 and 25), of which the first solves the problem in a radial manner, while the other almost appears to be an illustration for Alberti's treatise. And, in fact, the text which accompanies the latter plan is closely related to Alberti's statements concerning the advantages of winding streets.[111]

In addition to his dependence on Alberti, De Marchi shows that he is acutely aware of the desirability of visual effects that can be achieved in a well-planned city. In the chapter that accompanies Fig. 25, he describes how he designed this plan.[112] He begins by adjusting one set

107. All above recommendations can be found in the treatises of either Alberti or Francesco di Giorgio.

108. De Marchi, *op.cit.*, I, ch. 31. Cf. with its obvious source, Alberti, *op.cit.*, IV, ch. 5. De Marchi's reference to the "ancients" apparently includes Alberti. See also note 112 below.

109. De Marchi, *loc.cit.*

110. *Ibid.*, I, ch. 33.

111. Alberti, *loc.cit.*

112. *Ibid.*, III, ch. 59: "Ancora hò repartito l'ara in questo modo, perche non si perda terreno, e che habbia gratia e tenire

of streets to the outstanding natural element of the site, the winding course of the river. The second set of streets is determined by the dominant feature of the town itself, the wall circuit. The main streets are planned in the "contemporary manner" and designed straight and wide, like those found in "magnificent cities" such as Rome, Florence, and Naples. From the combination of straight major and winding minor streets, De Marchi expects to derive interesting picturesque effects and "miraculous perspectives." The stranger who arrives in this city will see churches, palaces, squares, and fountains at every turn. Walking along one of its main streets, he will be confronted with a new and different vista at every corner he passes. So speaks De Marchi, the urban aesthetician.

However, there are many facets to Francesco's numerous plans and most of them are explained in practical terms. Pure functionalism characterizes the plans shown in Figs. 26, 27, and 28, which belong to the most eloquent and representative examples of sixteenth century military urban planning. Three irregular polygons of generally oval shapes, two with seven, one with eight bastions, their interior layouts are basically radial, although two of the plans combine radial with rectangular features. Their irregularities and the mixture of their components express the aims of the military planner more clearly than the ideally symmetrical designs which are usually shown in modern publications.

De Marchi is most explicit in his description of Fig. 28.[113] The plan shows a checkerboard skin draped over a radial skeleton. De Marchi wants its main piazza to have a diameter of 130 paces. Along its seven sides he places the most important public buildings: the city hall, the customs house, the hall of justice, the main church, the library, and the school. One side he reserves for the "orefici" and all those who work with gold. The city is divided into seven quarters, each of which has its own piazza. For the sake of variety and greater interest, these minor squares are to be of varying sizes and proportions. Each should have a public fountain and all the shops needed to provide the residents of its section with all the necessities of life. The garrison of 8,900 men, which De Marchi estimates is needed to man the defenses adequately, should be divided into seven equal groups, each group to be housed in a different sector of the city so that all walls and bastions can be manned quickly and efficiently in case of an emergency.

This plan also explains the wide belt of open space which separates the fortifications from the built-up area of the town proper. The arcs that interconnect neighboring cavaliers on the lower part of the plan are pre-planned "retirate," to be thrown up in the event of a breached curtain or a fallen bastion. It was primarily for this purpose that the military architect insisted on the open space between walls and habitations, the so-called "pomerio," which is shown on practically all plans of this period. In addition to providing adequate space for the building of emergency ramparts, this *pomerio* could be used for gardening in peacetime and for the encampment of troops during a siege.[114]

The description of this plan, which stresses practical necessity, can be complemented by that which accompanies Fig. 26, in which De Marchi emphasizes public convenience. The covered arcades which are shown along the second ring of habitations and around the central piazza are a recurrent feature on many of his plans. De Marchi may well have been thinking of his native

l'opinione de gli Antichi, che facevano le loro strade tortuose: acciò che no fossino così battute da gli venti, et ancora la città ne par più grande, e belle. Perche ogni volta che li Forestieri arrivano in una città guardano dalla strada maestra se vedino Palazzi, Tempii, Piazze, Fonti, Collonate, Statue, Pitture, et altre simile cose, et ogni volta che voltano un canto pensano di vedere altre nove cose, come si trovano in effetto. Così ho fatto parte delle strade secondo gli Antichi seguendo l'ordine della più segnalata cosa che sia in l'ara dell'habitatione, ch'è il corso dell'aqua, la dove viene à formar queste strade, che rendano una miracolosa prospettiva. Poi mi parve di farvi d'un'altra sorte di strade seguendo la seconda cosa più segnalata dell'ara, ch'è il cinto delle mura, il quale và per il dritto, viene à formare le strade, che hoggidì s'usano nelle città magnifiche. . . ."

113. *Ibid.*, III, ch. 100.

114. *Ibid.*, III, ch. 74: "Poi li hò disegnato uno spatio trà li terrapieni, e l'habitatione dove si potra fare retirate con nuovi ripari, quando la necessità occoresse, e porvi le battaglie, fare horti, e giardini per uso. . . ."

Bologna when he designed them and described their many advantages.[115] These porticoes have many uses, he writes, as they offer protection against the elements and permit people to congregate in rainy weather, either to walk or to transact business. As for the central piazza, De Marchi would leave it seven-sided, so as not to break "the order of the streets and the habitations." This last procedure was followed almost universally by sixteenth century military planners, whose central piazze generally follow the shape of the planned city's circumference. By connecting the corners of the interior with those of the outer polygon, the radial plan resulted automatically and was usually neat and symmetrical.

The basic aim of the military architect, however, is shown much more clearly by an irregular plan like Fig. 27, than by the crystalline symmetry and precision of geometric designs like Fig. 22. On the former plan, the basically rectangular layout has been ruthlessly violated by the insertion of diagonal streets which connect the central piazza with the town's eight bastions. Like many of De Marchi's plans, Fig. 27 was intentionally designed for a site which did not permit its ideally symmetrical development. And in trying to cope with an adverse situation, De Marchi expresses best the aims and methods of his profession. First, the fortifications had to be adjusted to the natural demands of the site; then, after the defensive belt had been laid out, the town's interior plan was adjusted to it. The prime objective was to provide each bastion with a straight and wide traffic artery which connected it with the central "piazza de arme," even if it meant the mutilation of an already existing city plan.

The military radial plan of the sixteenth century, therefore, is the product of uncompromising logic. By drawing his main traffic arteries from the circumference inward, the designer aimed at once for centralized control and for the most efficient traffic system oriented toward those points that he considered to be the most important, the bastions. Since the expressed ideal of the military planner was the regular polygon with evenly spaced bastions that rendered each part of the defended perimeter equally strong, the resultant designs usually were symmetrical and decorative. While many sixteenth century radial plans may create the superficial impression of being no more than "geometrical exercises in pattern making,"[116] their basic components were always determined by functional considerations. Even the most elaborately decorative designs, which also happen to be the ones most frequently shown in modern publications, nevertheless have a hard practical core underneath their surface embellishments.[117] Undoubtedly, the planner often derived great satisfaction from the mere visual aspect of his decorative and harmoniously self-contained paper design. Bellucci, for instance, seems to express more than mere satisfaction with a well-solved theoretical problem when he describes his circular eight-bastioned plan as being perfect (Fig. 17).[118] Reading between the lines, one has the feeling that Bellucci derived a genuine pleasure from the decorative surface qualities of his well-formed design, but as became the most vociferous exponent of the practical school of planning, he expressed the beauty of his plan purely in terms of its functional advantages.

The sixteenth century military architect adopted an urban scheme that had been shaped to an aesthetic ideal by the artist-architects of preceding generations. During the process of inte-

115. Alberti (*op.cit.*, VIII, ch. 6) also praises porticoes as being both functional and ornamental, but De Marchi may well be speaking from personal observation, as arcaded streets are an outstanding and most attractive feature of his native Bologna.

116. S. Lang, "The Ideal City . . . ," p. 97, note to figs. 12 and 13. The De Marchi plan, which is singled out in the cited article (Fig. 22 of this paper), is an extreme instance of an apparent preponderance of decorative over functional qualities. In this respect, it is an extreme not only for De Marchi's oeuvre, but for the literature on urbanism of the entire century and should not be accepted as being representative of 16th century planning trends.

117. A certain decorative effect is inherent in the very nature of an architectural plan. Due to its flat, two-dimensional rendering, even an irregular and unsymmetrical plan will have decorative qualities. Much of this is lost as soon as the three-dimensional illusion is added to the plan. Compare the linear version of the Castriotto-Maggi plan (Fig. 20) with its perspective counterpart (Fig. 21).

118. See note 95 above.

grating it with his new system of fortification, the military planner trimmed the radial plan of all its symbolic and most of its aesthetic qualities. He accepted an *objet d'art* and transformed it into a functional tool. The transformation was complete by the middle of the century when the radial plan had become an integral part of the new system of bastionated defenses and the exclusive property of the military architect.

Often designed, the complete radial plan was seldom executed. Almost an entire century had to pass after its inception before an occasion presented itself which permitted theory to be transformed into practice on Italian soil. In 1593 the Venetian Senate decided to fortify its eastern frontier with the most modern and most powerful fortress of its time, and Palmanova became the only radial fortress town to be built in Italy during the sixteenth century (Fig. 29).

A casual glance at Palmanova's plan leaves the impression that this is indeed the most complete realization of military urban theories, but closer study reveals a number of striking departures from the ideal that had been proclaimed in dozens of military treatises. For instance, only three of the town's nine bastions are linked directly with the central piazza. Other discrepancies include the streets that lead from the gates straight to the town's center and the hexagonal shape of the central piazza, which does not correspond to the town's circumference. It appears that the military engineer, after fifty years of planning for just such an occasion, met with obstacles which prevented him from developing his theories to their fullest extent. Apparently, the civilian architect, who had made no comment on the radial plan for over half a century, reasserted himself in urban matters when it came to the actual construction of a project.[119] Therefore, while Palmanova's plan consists of a fascinating mixture of military and civilian features, it also represents the milestone that marks the end of military dominion over the radial city plan. The civilian architect revolted against the brutal functionalism of the soldier's concept. He rediscovered the radial plan's aesthetic potentialities which, in the hands of Baroque planners, were to be converted into some of the most grandiose statements in the history of urban planning.[120]

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119. Palmanova's complex and interesting building history is the subject of an article now in preparation by the present writer. At this point, it might be of interest to some that the usual attribution of the plan to Scamozzi is no longer acceptable. The original plan for Palmanova was probably designed either by Giulio Savorgnano or Bonaiuto Lorini, both outstanding military architects in the employ of the Venetian Republic. However, Scamozzi may have had a hand in subsequent modifications of the original military radial plan.

120. This paper is a revised extract from a doctoral dissertation submitted to the University of California, Berkeley, in 1958. I am deeply indebted to Prof. James Ackerman, without whose encouragement and guidance this paper could not have been written. I also wish to thank Dr. Howard Hibbard, Columbia University, and Dr. Helmut Kueltzen, Hertziana Library, Rome, whose aid greatly facilitated my research in Italy in 1956-1957; and Prof. Richard Tansey, San Jose State College, who read this manuscript and offered valuable suggestions. Finally, for their helpfulness and courtesy, I wish to express gratitude to the officers and staffs of the National Libraries in Rome, Florence, and Venice, the Gabinetto delle Stampe of the Uffizi Galleries in Florence, the Library of the Museo Correr in Venice and the Venetian State Archives.

NOTES

TWO ITALIAN PORTRAIT-BUSTS OF HENRY VIII

HELEN J. DOW

The likeness of Henry VIII that comes most readily to mind today is one resembling the imperious portraits painted by Holbein and his contemporaries towards the closing years of the King's reign.[1] Of these, the best surviving example now belongs to Baron Heinrich Thyssen-Bornemisza in Switzerland, and was made by Holbein in 1537 (Fig. 1). It depicts Henry just ten years before his death, as a portly, middle-aged despot with cropped hair and fair beard. Although a capable artist such as this was able to capture something of his sitter's individual personality, his decorative, linear style particularly enhances the King's exalted station. It appears to have been a natural preference in royal portraits of this period to emphasize especially the abstract concept of kingship, in deference to the theory of divine right. Where an artist did reach behind this austere majesty to concern himself directly with Henry's personality, he too often sank to a caricature-like courseness in his portrayal of a cruel and calculating monarch.[2]

All these late portraits, however, are strangely at variance with the earliest written accounts of the King. In 1515, for example, a Venetian visitor had described him as the "handsomest potentate I ever set eyes upon: above the usual height, with an extremely fine calf to his leg, his complexion very fair and light, with auburn hair, combed straight and short in the French fashion, and a round face so very beautiful that it would become a pretty woman, his throat being rather long and thick."[3] Apparently his warmth and charm of manner equaled his physical beauty, for Sir Thomas More wrote to the Bishop of Rochester that "the King has a way of making every man feel that he is enjoying his special favour."[4]

In fact, we know from the paintings in illuminated manuscripts that, in his early years, Henry looked very different from the corpulent stereotype that has since become associated with his name. Through the first decade of his reign he was represented on coins and documents as a slender, beardless figure with straight hair cropped just below his ears. The coiffure is reminiscent of that worn by his elder brother Arthur, Prince of Wales, as it is seen for example, in his portrait from the Magnificat Window in the North transept of the Priory Church at Great Malvern.[5] This painting shows Arthur's appearance in 1501, a year before his sudden death made Prince Henry heir to the throne at the age of ten.

As far as dress was concerned, both Arthur and Henry seem to have been following the fashion of their times as they saw it exemplified by their father, King Henry VII. Perhaps the finest portrait of Henry VII is the terra-cotta bust now in the Victoria and Albert Museum (Fig. 2), which has often been ascribed to the work of the Florentine sculptor, Pietro Torrigiano. Indeed, the attribution would seem to be correct, since we know for certain that Torrigiano designed the cast bronze effigy of Henry VII which decorates his tomb (Fig. 3), and the similarities between these two heads are striking. The tomb effigy has a companion piece in the figure of Henry's Queen, Elizabeth of York, also by Torrigiano,[6] but we do not know the original location of the terra-cotta bust. It has been suggested that it was a companion piece to two terra-cotta busts in the Metropolitan Museum of Art in New York City, one of which, an ecclesiastic, has been doubtfully identified as St. John Fisher, Bishop of Rochester, and the other, a gentleman in a fur-lined cloak, has been variously identified as King Henry VIII and Sir Henry Guildford, Equerry to Henry VIII (Fig. 4). All three busts are believed to be by the same artist, and perhaps formed part of the furnishings of the main room over the Holbein Gate in Whitehall.[7]

On stylistic grounds it is not difficult to believe that the same Italian sculptor was responsible for all three terra-cotta portraits, but a strange affinity between

1. The author wishes to thank the British Council; the Canada Council; the Courtauld Institute of Art; F. J. B. Watson, Assistant Surveyor of the Queen's Works of Art; Kingsley Adams, Director of the National Portrait Gallery, London; John Goldsmith Phillips, Curator of Renaissance Art at the Metropolitan Museum, New York; A. de Kerversau, the Bibliothèque Mejanes, Aix-en-Provence; and all those without whose kind and generous assistance this paper would not have been possible.

2. See, for example, Christopher Morris, *The Tudors*, pls. 19 and 20.

3. E. G. Salter, *Tudor England through Venetian Eyes*, London, 1930, pp. 80-81.

4. *Ibid.*, p. 76, from T. Stapleton, *Vita Thomae Mori*, cited in R. W. Chambers, *Thomas More*, London, 1935, p. 169.

5. For manuscript representations of Henry VIII see Erna Auerbach, *Tudor Artists*, London, 1954; the portrait of Prince Arthur in the Magnificat Window of the Priory Church at Great Malvern is illustrated in Margaret Rickert, *Painting in Britain: the Middle Ages*, London, 1954, pl. 192.

6. See *Royal Commission on Historical Monuments*, I, Westminster Abbey, London, 1924, pls. 189 and 200.

7. F. Grossmann, "Holbein, Torrigiano and some Portraits of Dean Colet," *Journal of the Warburg and Courtauld Institutes*, XIII, 1950, pp. 222-224; and *Metropolitan Museum of Art Bulletin*, XII, No. 6, Feb. 1954, p. 148. Grossmann identifies the second portrait in New York as Henry VIII, while the Metropolitan Museum labels it Sir Henry Guildford. The earliest surviving reference to these busts occurs in a letter of the antiquary Michael Tyson, written to William Cole on November 10, 1779 (British Museum, Add. MS 59993, fol. 152r), in which he recorded seeing the three busts at Hatfield Priory, Hatfield Peverell, Essex, in the home of a coachmaker named Wright, and described them as Henry VII, Bishop Fisher, and Henry VIII at the age of 19, all said to be the work of Pietro Torrigiano. According to I. T. Smith (*Antiquaries of Westminster*, London, 1807, pp. 22f.) they were bought by Mr. Wright from an ironmonger's shop, having been stolen from the Holbein Gate at Whitehall Palace when this gate was taken down in 1759.

the Victoria and Albert Museum's bust (Fig. 2) and that of the gentleman in a fur-lined cloak in the Metropolitan Museum (Fig. 4) casts suspicion on the identification of this New York portrait as Sir Henry Guildford.[8] The high flat cheek-bones, the straight nose of moderate length and the heavy eyelids, not to mention the gently curving eye-brows, echo remarkably from the one face to the other. We know from his tomb effigy (Fig. 3) that the London bust represents King Henry VII. Could the New York figure be intended to represent one of the King's sons?

A roughly contemporary painting of a plump young man, now in Her Majesty's Collection at Windsor Castle, has the same even eyes, moderate nose, and full, shapely mouth as the so-called bust of Sir Henry Guildford in the Metropolitan.[9] Moreover, this painting is clearly identified as Prince Arthur in the 1542 inventory of King Henry VIII's pictures.[10] Arthur, however, died in 1502 when he was only fifteen years old, whereas the terra-cotta bust clearly represents a man some years above fifteen. Like the Henry VII bust, the New York figure wears an ermine-lined cloak (Fig. 4), a fashion very exceptional at this period for anyone other than a king.[11] Is it not a possibility then that the beardless face with straight hair a little shorter than his father's, belongs to Arthur's younger brother, Henry VIII? The slightly stocky proportions and wide bone structure are in keeping with the features of the aging monarch as Holbein later depicted him (Fig. 1), while the dented chin recalls the young king's mother, Elizabeth of York, who displays a similar facial feature in her wooden funeral effigy (Fig. 5), still preserved in the Wax Museum at Westminster Abbey.[12] Henry resembled his mother in his general appearance, and it is no doubt from her that he inherited the round face whose beauty was so striking to the Venetian visitor of 1515. Moreover, the charming expression of this bust fits the gay lover of sports, music, and fashions, as Henry VIII was so often characterized by his earlier chroniclers. The firm jaw and proud bearing are softened by the vivacious mouth and pensive eyes, yet it is not difficult to discern the strong-willed, fiery personality which was to become so pronounced in his later life.

Born in 1491, he was almost 18 years old when he succeeded his father to the throne in 1509. Judging from the age depicted by the terra-cotta bust, the likeness could hardly have been made prior to Henry's accession, a fact which is further supported by the kingly ermine which he wears. Moreover, we have no proof that Torrigiano worked in England prior to the reign of Henry VIII. In fact, there is evidence to show that this Italian was in the Low Countries between 1509 and 1510, working for Margaret of Austria, Regent of the Netherlands.[13] In 1511 the English king sent Margaret an army of about 1,500 men to aid in her struggle against the French ally, the Duke of Gelders, and it is no doubt significant that it was in this year that Torrigiano first received royal patronage in England. He was asked not to design his own work, however, but only to execute in bronze the design for the tomb of the King's paternal grandmother, Lady Margaret Beaufort, which had already been drawn on cloth by Meynard Vewicke.[14] Apparently it was only after the successful completion of this contract that in 1512 Torrigiano was commissioned to design the tomb of the late king, Henry VII (Fig. 3), whose effigy so much resembles his terra-cotta portrait (Fig. 2) in the Victoria and Albert Museum.[15] Comparing both the bronze and the terra-cotta heads of Henry VII by Torrigiano with the death mask of this king, which is still preserved in Westminster Abbey, it is easy to see how the Italian could have obtained such a realistic likeness, even though it is doubtful that he ever saw his sitter in life.[16] By comparison with the mask, however, Torrigiano has slightly idealized the king, as one might have expected a Florentine contemporary of Michelangelo would have done. It seems probable, therefore, that his terra-cotta busts of Henry VII and Henry VIII do not antedate 1512.

Of course we do not know for certain that both busts were executed at the same time. Torrigiano has been associated with another terra-cotta portrait in the London area, namely the tomb effigy of Dr. John Young in the Rolls Chapel, dated 1516,[17] the year when he accepted the contract for the making of the high altar of the Henry VII Chapel, though it was not actually begun before 1519.[18] He was commissioned to make the tomb of Henry VIII in 1518, but the work never seems to have been carried out.[19]

8. See Martin Weinberger's article, "A Portrait Bust by Pietro Torrigiano," *The Complete Collector*, New York, vol. 4, no. 7, May 1944, pp. 2-8. Actually the features of the bust express a totally different personality from that of Holbein's portrait of Sir Henry Guildford at Windsor Castle, which was the basis of this identification.

9. Lionel Cust, "Notes On Pictures in the Royal Collections—XXI," *Burlington Magazine*, XIX, June 1911, pl. II.

10. *Ibid.*, p. 127.

11. For this opinion the author is indebted to Kingsley Adams, Director of the National Portrait Gallery.

12. Elizabeth of York's funeral effigy is illustrated by R. P. Howgrave-Graham in "Royal Effigies at Westminster Abbey," *Country Life*, CXI, Jan. 11, 1952, p. 843 and in *Archaeologia*, X, 1907, pl. LX.

13. Grossmann, *op.cit.*, p. 208, and Claude Cochin: "Piero Torrigiani en Flandre," *La Revue de l'art ancien et moderne*, Paris, XXXVI, July 1914-Dec. 1919, pp. 180-182.

14. *Archaeologia*, LXVI, 1915, pp. 366 and 371.

15. The tomb contract is referred to in the indenture for a tomb for Henry VIII and Queen Katherine, see *Archaeologia*, XVI, 1809, p. 84

16. For Henry VII's death mask see R. P. Howgrave-Graham, *op.cit.*, p. 843; *Archaeologia*, X, 1907, pl. LXI, and Morris, *op.cit.*, pl. 11.

17. The tomb of Dr. John Young can be safely attributed to Torrigiano if details like the cherubs above this tomb are compared with the *putti* on the Henry VII monument, definitely known to be the work of Torrigiano.

18. E. W. Brayley and J. P. Neale, *The History and Antiquities of the Abbey Church of St. Peter, Westminster*, London 1818, I, p. 17.

19. *Ibid.*, p. 54.

In 1519 he left England to return to Florence in order to obtain some assistants, coming back with them a year later and remaining until 1522 or 1524, when he went to Spain. It has been thought that the year 1519 may also be the time when Henry VIII first let his beard grow.[20] He appears not to have settled permanently on this hair style before 1526, however, since of two miniatures at Windsor dated in that year, one is beardless.[21] Nevertheless, the beard seems to have been retained after this date, although he did not poll his head until 1535, when he commanded his court to adopt a similar fashion.[22] On the basis of hair style, therefore, the Metropolitan bust could not postdate 1526. Judging the age of the sitter to be in the vicinity of thirty years, however, we would be safer to confine its date between 1520 and 1522, the period when Torrigiano was working on the altar of the Henry VII Chapel. In 1520 Henry VIII was just twenty-nine.

Evidently he especially favored Torrigiano with his patronage, but he was not the first English king to commission Italian work. According to his father's will of 1509, the Henry VII tomb was to have been completed after a design by the North-Italian artist, Guido Mazzoni of Modena, known in England as Master Pageny.[23] Whether or not Mazzoni ever actually visited England cannot be proved for certain. The English interest in him seems to have been inspired by the French King, Charles VIII, who found Mazzoni in Naples in 1495 and brought him back to Paris. When Charles died in 1498, his successor Louis XII commissioned the visiting sculptor to construct the late King's tomb at St.-Denis,[24] and in July of the same year agreed to renew the Treaty of Étaples with Henry VII. It was doubtless as a result of Louis' influence that the English king commissioned his own tomb from the same Italian. Estimates for the execution of its figure work show that Mazzoni's design for Henry VII's tomb had been accepted by 1506, but at the same time indicate that by that date it had been decided that someone other than Mazzoni himself should do the actual work.[25] The explanation may be that Mazzoni left France the next year for Italy and did not return to the French court until 1509-1511.[26] He had no further influence in England, however, for by this time Henry VIII had ascended the throne. The new king disliked Mazzoni's tomb design, and decided to give his patronage to the Florentine Torrigiano instead. Whether the decision was made on purely aesthetic grounds is open for speculation. We can be certain at any rate that Henry VII favored the North-Italian sculptor between 1498 and 1506.

The English King may have seen him only in France, since we know that Henry VII was very familiar with the French court. That Mazzoni did more for Henry VII than design his tomb, however, is indicated by the painted terra-cotta bust of a child in Her Majesty's Collection at Windsor Castle (Figs. 6 and 7), whose style suggests the workshop and even the hand of Master Pageny himself. The Castle records from the nineteenth century ascribe the bust to "Conrad Meit of Worms, sculptor to Margaret of Austria, Regent of the Netherlands, about 1510-25," but there is nothing German in its expression. It is, on the contrary, unusually like those figures which are known to survive from the hand of Guido Mazzoni (Fig. 8).[27] His work was normally executed in clay and was always vividly realistic. From the point of view of style, in fact, he appears to have no equal, and it is just this unique style which is so powerfully evident in the Windsor bust. Especially remarkable is the vivacious expression of animation on the face. Every muscle seems to be so carefully understood that the mischievous charm of a happy little boy radiates from every detail. Who but Guido Mazzoni could have achieved such a rare interpretation of this lively personality, and in doing so, who but this extremely realistic master would have included every wrinkle and gradation of the features, even to the teeth in the open mouth? Of all his extant works, none could be more captivating.

Once it is established that this bust can be attributed to Guido Mazzoni, the identification of the child himself becomes entirely feasible. We have shown that Henry VII patronized Mazzoni somewhere between 1498 and 1506. More likely than not the child would be a portrait of one of Henry's two sons. Now in 1498, Arthur would have been about twelve and Henry seven years old. As far as we can judge from extant evidence, Arthur was thin and fine-boned like his father, whereas Henry grew up to have a thickly set, rotund figure. Clearly the bust represents a chubby child of not more than eight years, so that we are led to identify the sitter as Prince Henry. This in fact

20. Lionel Cust, in *Burlington Magazine*, XXXI, Nov. 1917, p. 218.

21. *Idem.*

22. Ernest Law, *The History of Hampton Court Palace*, I, London, 1890, p. 175, quoting from Stowe's *Annals.*

23. For the identification of "Master Pageny" as Guido Mazzoni, see Alfred Higgins, *Archaeological Journal*, LI, 1894, p. 137.

24. Illustrated by Paul Vitry: *Michel Colombe*, Paris, 1901, p. 169. On p. 16 he suggests that Mazzoni first attracted French royal patronage by making the terra-cotta bust of King Charles VIII which is now in the Bargello, Florence.

25. *Letters and Papers Foreign and Domestic of the Reign of Henry VIII*, London, 1920, I, 2nd ed., p. 141 (Part I, No. 1, No. 1805).

26. Vitry, *op.cit.*, p. 168, and Thieme-Becker, *Allgemeines Lexikon der Bildenden Künstler*, XXIV, Leipzig, 1930, p. 315.

27. The child's bust at Windsor Castle is attributed to Guido Mazzoni in Thieme-Becker, *ibid.* Mazzoni's work included a number of portraits, certainly an equestrian statue of Louis XII formerly at the Château de Blois, and the bronze bust of King Ferdinand in the Naples Museum, while according to legend, Mazzoni's terra-cotta Deposition in the Church of Monte Oliveto represents Pontano as Nicodemus, Sannazzaro as Joseph of Arimathea, and Alfonso III as St. John. (C. R. Post, *A History of European and American Sculpture*, Cambridge, Mass., 1921, p. 128.)

would seem to be correct, if the head is compared to the drawing of a child in the Bibliothèque Mejanes in Aix-en-Provence (Fig. 9), which is said to represent King Henry VIII of England as a child.[28] In both the bust and the drawing we find the same stocky proportions and rounded features which we have already recognized as belonging to Henry VIII. Moreover, both child-portraits wear the same very short hair-cut. Even apart from the fair complexion so pronounced against its black and gold costume, we cannot mistake that the head at Windsor Castle represents one of the English royal house, for the broad smile on its face bears a remarkable resemblance to the expressions of some of the King's twentieth-century descendants. In the succession of portraits of Henry VIII himself, we meet the sideways glance again in the painting by Joos van Cleve at Hampton Court Palace, which was executed in 1536,[29] and in a number of Holbein's works.

The Windsor bust (Figs. 6 and 7) makes an especially noteworthy comparison with Torrigiano's in the Metropolitan Museum (Fig. 4). There is the same squared contour, the same high, flat cheeks and thick neck, the same dimpled chin, and even the same creases slanting across the face from the inner corners of each eye.[30]

Both busts can go a long way to correct our distorted conception, not only of Henry VIII's physical appearance, but more especially of his personality. For they remind us that the monarch who is so much remembered for his stubborn ruthlessness was also a gentleman of much charm and vivacity, who must have had a penetrating understanding and a wide appreciation of the world he lived in. Cultured, athletic, and fashion-conscious, he apparently came into early contact with the Italian Renaissance, and having sat to Guido Mazzoni while only a boy, he was determined as a king to carry on the artistic leadership which his father had begun. Yet, of the long sequence of portraits that he left to celebrate his name, none equal the charm and vitality of the two Italian terra-cotta busts that have captured so masterfully the beauty and strength of his youth.

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28. The author is indebted to A. de Kerversau of the Bibliothèque Mejanes, Aix-en-Provence, for the information that this drawing is believed to have been taken to France by Henry VIII's sister Mary, Queen of Louis XII, according to the record made by M. Rouard in 1863.

29. Law, *op.cit.*

30. In the light of Guido Mazzoni's work for Henry VII, it is conceivable that the bust of Henry VIII's sister Mary, which Torrigiano repaired for Margaret of Austria (Grossmann, *op.cit.*), could have been a work by Mazzoni, who was not himself asked to make the repairs because at the time he was not available in Northern Europe.

NOTES ON THE OWNERSHIP OF REMBRANDT'S *POLISH RIDER*

ANDREW CIECHANOWIECKI

Among the treasures of the Frick Collection in New York, one picture above all has been intriguing and fascinating laymen as well as scholars for half a century (Fig. 1). It is, therefore, a compliment to the connoisseurship of Henry Clay Frick that this picture, Rembrandt's *Polish Rider*, was one of the four paintings he loved most.[1] This romantic portrayal of the "shining youth in search of something distant," as Held graphically puts it,[2] is unique in Rembrandt's oeuvre and has had a remarkable career. Nevertheless many points in the picture's history need explaining, and it seems that even the most secondary detail is not without importance when we try to reconstruct the wanderings and vicissitudes of a major work of art. May this assumption justify the following lines.

Since its discovery by Western scholars (Bode in 1883 and Bredius in 1897),[3] the *Polish Rider* has had much publicity. The literature dealing with the painting has grown steadily but usually did not take into account Polish publications on the subject. It is, therefore, certainly a great tribute to the scholarship of Julius B. Held that in his important article published in 1944, he made such excellent use of all the available Polish sources.[4] However, today we are able to add a few more facts to the known history of the painting, facts that clarify certain points heretofore obscure.

All sources seem to be agreed that the picture was bought for the collection of the last King of Poland Stanislaus Augustus (1764-1795) by Michael Cleophas Ogiński, composer and politician, who during the years 1790-1791 was Polish Envoy Extraordinary to Holland and England. This statement is based on information, dated 1844, found in the inventory of the Dzików gallery, where the picture was kept until its sale in 1910 to the Frick Collection.[5] Although Held never questioned this, he seemed astonished that Ogiński's extremely detailed Memoirs[6] did not mention such an important purchase or even indicate a serious interest in the visual arts. However, in spite of this implied doubt, he even suggested that Ogiński

1. *The Frick Collection, An Illustrated Catalogue*, 1, Paintings, Pittsburgh, 1949, text, introduction.

2. Julius B. Held, "Rembrandt's Polish Rider," ART BULLETIN, XXVI, 1944, p. 246.

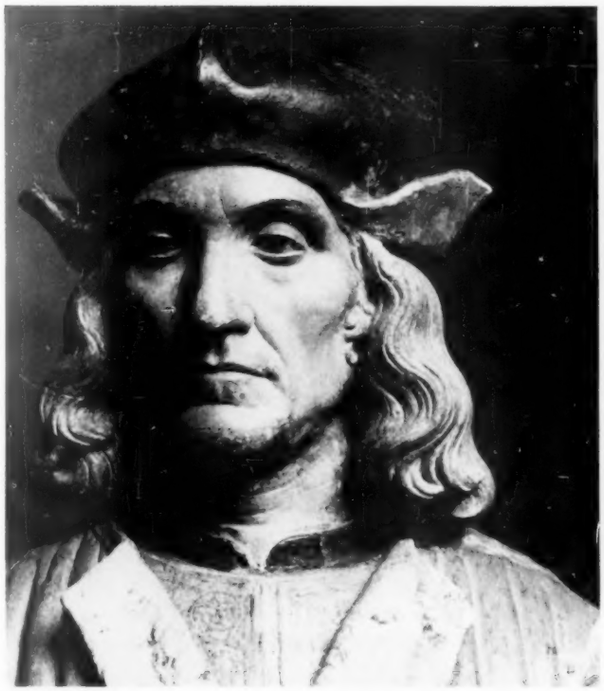
3. W. Bode, *Studien zur Geschichte der Hollaendischer Malerei*, Berlin, 1883, p. 499; A. Bredius, "Onbekande Rembrandts in Polen, Galicie en Russland," *De Nederlandsche Spectator*, 1897, p. 197.

4. The delayed history of publication of *The Frick Collection, An Illustrated Catalogue*, 1, The Paintings, as explained in its Preface, accounts for the fact that Professor Held's article is not taken into account in the catalogue entry concerning the *Polish Rider* (pp. 126-128). Although volume one itself was published in Pittsburgh in 1949, these pages are among that part of the Catalogue which was written and printed during the years 1928-1932.

5. Held, *op.cit.*, pp. 247-248.

6. *Mémoires sur la Pologne et les Polonais*, 2 vols., Paris, 1826-1827.

1. Hans Holbein, *Henry VIII*. Switzerland, Thyssen Collection (photo: National Gallery, London)



2. Pietro Torrigiano, *Henry VII*. London, Victoria and Albert Museum (Crown Copyright)

3. Pietro Torrigiano, Bronze Effigy of Henry VII London, Westminster Abbey

1. Rembrandt, *Polish Rider*. New York, Frick Collection

might have been instrumental in the transfer of the picture from Prince Lubecki to Bishop Hieronim Stroynowski, since the ex-Envoy was on close terms with both these later owners of our picture.[7] Seemingly there was no reason to question this traditional information. Firstly the dates tallied. More important still, it was well known that most Polish diplomats of the period, or even travelers on the "grand tour," were always on the lookout for works of art that could enrich the splendid collection of that true connoisseur and lover of art, Stanislaus Augustus. For instance, young Nestor Sapieha visiting Paris writes to his mother: "My eyes are fairly popping out of my head trying to pick out a fine painting or an important antiquity for the King."[8]

It so happens, however, that there exists a document proving who made this all-important contribution to the Royal Collection. The person who had the original taste and knowledge was another member of the Ogiński family, often confused with his younger relative in politics, music, literature, and the fine arts in which they were both active, sometimes at exactly the same time. He is Michael Casimir Ogiński (1728-1800), grand hetman of Lithuania, by marriage the King's cousin, and one of the most fascinating and picturesque figures of that elegant age. The document, an undated, whimsical letter, having only a marginal note (the date of its reception) in the King's handwriting ("mediis Augusti 1791"), reads as follows:

> Sire,
>
> I am sending Your Majesty a Cossack, whom Reinbrand had set on his horse. This horse has eaten during his stay with me for 420 German gulden. Your Majesty's justice and generosity allows me to expect that orange trees will flower in the same proportion.
>
> Bowing to your feet, Your Majesty's—My Lord Master's—most humble servant
>
> Michael Ogiński G(rand) H(etman) of L(ithuania)[9]

This letter was most probably written from The Hague, where we know Ogiński spent most of that year. On the other hand the mention of German guldens might suggest that the picture was bought in Germany, whence Ogiński came to Holland. However, his letters to the King written during the early spring,[10] make no mention of the purchase, and it would, therefore, be logical to assume that the picture was bought about May 1791 either in Amsterdam or The Hague, and that the price is given in German guldens only for the sake of convenience.

Another interesting point originates in our letter; it is Ogiński who first gives the picture the fanciful title "Cossack on horseback" under which it was known in the King's collection,[11] and which was to be changed to its present equally unreliable one at the beginning of the nineteenth century, under the influence of romantic historicism and spurious family tradition.

There is finally one more question dealing with the letter that we must answer: was the picture bought for the King, or did Ogiński buy it for himself and then decide to exchange it for, of all things, orange trees? Prince Michael Casimir Ogiński was a vain, ambitious, politically naïve man. He was forever involved in the most ludicrous intrigues of the period and a friend of such impostors as Cagliostro, Zannovich Castriotto, and Princess Tarakanova, but he was at the same time one of the greatest patrons of art and industry in Poland. A typical product of the Polish Age of Enlightenment, he spent much of his enormous wealth building canals and factories while also financing one of the best private orchestras and opera houses in Europe. An amateur musician and author of some repute, he also painted and had quite an important collection of pictures in his Warsaw palace. After his death, house and contents were sold at auction in 1801.[12] This collection consisted of representative examples of Italian, Dutch, Flemish, French, and German schools that must have been of high quality, if they reached the prices that the court painter Marcello Bacciarelli speaks of when voicing his hopes for an equally successful result of the disposal of the Royal Collection, planned at that time by the King's heirs.[13] It is, therefore, fair to suppose that Ogiński bought the *Polish Rider* originally for himself, since we have no evidence that the King had entrusted him with any buying mission. Moreover, this painting seems to be the only one ever passing from his to Royal hands as a result of his many foreign travels. Finally we know that Ogiński had just purchased the castle of Helenów near Warsaw and was keen on arranging the gardens and hothouses. The only orangery of any size in the vicinity able to furnish him with the desired orange trees was the royal one

7. Held, *op.cit.*, p. 248.

8. J. Białostocki and M. Walicki, *Malarstwo europejskie w zbiorach polskich*, Warsaw, 1955, intro.

9. Czartoryski Archives in Cracow, Correspondence of Stanislaus Augustus with the Ogiński family, fol. 729. In Polish the letter reads:

"Sire,

Odsyłam Waszey Królewskiey Mości Kozaka którego Reinbrand osadził na koniu, zjadł ten koń przez bytność swoją u mnie 420 guldynów niemieckich. Sprawiedliwa Łaska Waszey Królewskiey Mości spodziewać mi się każe, że pomarańczowe drzewa w tey proporcyi zakwitną, do nóg upadam

Waszey Królewskiey Mości
PMM nayniższy sługa
Michał Ogiński HWL"

10. Correspondence of Stanislaus Augustus, fol. 729, letters from Berlin.

11. "Cossaque à cheval," Inventory of 1795, see T. Mańkowski, *Galeria Stanisława Augusta*, Lvov, 1932, no. 1734; M. Walicki, "Rembrandt w Polsce," *Biuletyn Historii Sztuki*, 1956, no. 3, p. 329.

12. A monograph on Ogiński's patronage of the arts is in process of publication in Germany.

13. Mańkowski, *op.cit.*

in Łazienki Palace, thus the idea of this barter arrangement was probably born. Nevertheless, on the list of owners of the *Polish Rider* the name of its first Polish "proud possessor" should not be omitted, even if his ownership lasted only a few months.

New Polish publications have thrown some more light on the picture's later history and are worth noting here.[14] Already Held has rightly surmised that Rembrandt's masterpiece was not sold during the first years after the King's death but remained until the full dispersal of the Royal Collections ordered by the King's niece and heiress Countess Thérese Tyszkiewicz.[15] This assumption is vindicated by the diary of Countess Valérie Tarnowska *née* Stroynowska, the future owner of the picture. In 1810 while viewing the former Royal Collection, she saw the *Polish Rider* in Warsaw and wished that she could buy the painting. Her wishes were based not only on the recognition of the picture's obvious artistic merits and of its romantic fascination, but resulted from a spurious, panegyrical attribution, so typical of the period. Valérie Stroynowska saw in the "shining youth" not the peasant-cossack but a noble *condottiere* from the Lisowski regiment, perhaps even that Colonel Stroynowski, a distant forbear, who commanded the regiment during the Thirty Years' War.[16] It is, therefore, very probable that it was she who talked her uncle, the Bishop of Vilna, Hieronim Stroynowski into buying the alleged portrait of their ancestor for the astonishingly high sum of 500 ducats. After the premature death of the Bishop only a few months after the acquisition, the *Polish Rider* was inherited by Valérie's father, senator Valérien Stroynowski. On his death in 1834 it passed from the castle of Horochów in Volhynia to Dzików, the residence of Valérie Stroynowska and her husband Count John Amor Tarnowski, the eminent bibliophile. Although we find no more evidence that the picture continued to be considered a family portrait, once christened "Lisowczyk" (soldier of Lisowski) by its historically and romantically minded owners, it kept that name, which appeared for the first time in print in 1842,[17] until in America it was given the more general title of *Polish Rider*.

Thus, one of the most astonishing of Rembrandt's masterpieces, first styled "Cossack on horseback," entered Poland through the intermediary of such a colorful person as Ogiński. Exchanged for the fragile beauty of flowering orange trees, it came to grace the collection of perhaps the greatest crowned collector of eighteenth century Europe. Then, due to the ambitions and romantic exaltation of a talented woman, it was purchased as an alleged portrayal of a family *condottiere*. But in all its vicissitudes it remains forever a monument erected by the great master to the youthful vitality, alertness, and suspense of a Polish cavalryman.

THE STATE COLLECTIONS OF ART,
ROYAL CASTLE, CRACOW

14. K. Grotowa, *Zbiory W.iJ. Tarnowskich*, Wrocław, 1957; M. Walicki, *op.cit.*
15. Held, *op.cit.*, p. 248.
16. Walicki, *op.cit.*
17. *Kajetan Kożmian Rys życia Jana hr. Tarnowskiego*, 1842.

THE ETRUSCAN SOURCES OF DELACROIX'S *DEATH OF SARDANAPALUS*

LEE JOHNSON

The *Mort de Sardanapale* (Fig. 1) presents two problems that have long concerned students of Delacroix and remain unsolved in spite of several more or less ingenious hypotheses. How is it to be explained that Delacroix depicts a slaughter when none is described in Byron's play or, apparently, in any other literary treatment of the Sardanapalus theme before 1827? And is the spatial conflict between the diagonal arrangement of the composition as a whole and the steeply tilted foreground with its essentially frieze-like distribution of horse and figures, to be attributed solely to the caprice of the artist?[1] The present study will yield at least partial answers to both these questions.

Some notes written by Delacroix on a sheet of drawings for the *Sardanapale* clearly indicate the sort of works he wished to consult while preparing his painting. One of them runs thus: "étrusques de toutes façons."[2] So it may reasonably be assumed that before determining the final composition of the *Sardanapale*, Delacroix perused standard volumes of engravings of Etruscan antiquities. Indeed, by the time he came to paint his canvas in 1827, he had probably been familiar for some years with such engravings; for in an unpublished sketchbook,[3] which appears to date from the years of his training with Guérin, he notes: "La galerie d'étrusques de Florence. Le second vol. d'étrusques de M. Hamilton." The former probably refers to A. F. Gori's three-volume *Museum Etruscum*;[4] the latter, to P. F. Hugues' four-volume *Antiquités étrusques, grecques et romaines, tirées du cabinet de M. Hamilton.*[5] Neither work contains a source bearing a general relationship to the *Sardanapale*, although, as will be seen, three engravings in

1. Beatrice Farwell has redefined these problems in a recent article entitled "Sources for Delacroix's Death of Sardanapalus," ART BULLETIN, XL, 1958, pp. 66-71. While adding much valuable information to our knowledge of Delacroix's sources, Miss Farwell offers no solution to these specific problems and in the absence of more concrete evidence provisionally accepts the speculations of Jean Guiffrey and Paul Jamot, who attribute composition and subject, insofar as it differs from the dénouement of Byron's play, to Delacroix's invention.

2. Cited by Raymond Escholier, *Delacroix, Peintre, Graveur, Ecrivain*, Paris, 1926, I, p. 226, from the Louvre drawing no. 5278.

3. Louvre RF 6736.

4. Florence, 1737-43.

5. Naples, 1766-67.

Gori may have provided Delacroix with specific motifs for his painting. To find a basic resemblance in theme and arrangement between a so-called "Etruscan" work and the *Mort de Sardanapale*, it is necessary to turn to the collection of engravings after Wicar's drawings of painting and sculpture in the Uffizi and Pitti Galleries, which was published in four volumes in Paris from 1789 to 1814 and would no doubt have been well known to Delacroix.[6] The final plate in the last volume represents a bas-relief of a scene of slaughter, which is said in the adjoining commentary by Mongez to be carved on an Etruscan sarcophagus in alabaster (Fig. 2). As far as can be determined from the engraving, the original object was neither Etruscan nor a genuine Greek or Roman piece.[7] The subject, described by Mongez simply as a warrior attacking a group of young persons, remains problematic; but for the purposes of the present study it is important only to know that Mongez' interpretation of the content implied that a general slaughter was imminent. This engraving is related to the *Sardanapale* both in general conception and in detail: the action takes place about a large couch set in a diagonal position; various household articles are strewn across the lower edge of the picture, the most prominent being a vase in the center with a scalloped pattern; the group of figures in the foreground (distributed in the same sequence as Delacroix's) consists of a bearded, frowning male on the far right, slaying (or having mortally wounded) the figure next to him with a short, broad sword; a half-length figure, with full cheeks and parted lips, reclining on one elbow at the base of the couch; and, lastly, a nude male whose left leg is bent double and who, though incompletely shown in the engraving, may be presumed to be pulling something.[8] On the farther plane, to the right, there is, to continue the analogy with the *Sardanapale*, a nude seen from the back, leaning against the couch and with the right arm bent at an angle of approximately ninety degrees, the forearm being slightly foreshortened. Behind the couch to the left of this figure, also as in the *Sardanapale*, stands a female with an upraised arm that is drawn in a single plane and bent at the elbow, which points to the right.

These parallels are sufficiently numerous and precise to exclude any real probability of coincidence, and to justify the conclusion that this engraving is the main "Etruscan" source of the *Sardanapale*, and perhaps the most important pictorial source for the painting as a whole. But evidence of some lesser borrowings from genuine Etruscan sources must also be considered. The reclining pose of Delacroix's figure of Sardanapalus, which has no counterpart in the engraving, is commonly met with on the lids of Etruscan urns. The closest prototype I have found for the position of the arms is in Gori's *Museum etruscum* (Fig. 4).[9] The idea of a woman covering her face with a drapery to avoid the spectacle of death, which is used for the subsidiary figure behind the negro in the *Sardanapale*, may have been suggested by a detail in an engraving of a death scene in the same publication (Fig. 5).[10] The motif of the right arm holding the veil to the head seems to derive from an engraving of a Volterran urn in Francesco Inghirami's *Monumenti etruschi* (Fig. 7).[11] The manner in which the male figure in the right foreground grasps the concubine at the elbow appears to have also been inspired by one of Inghirami's illustrations: a *Rape of Proserpine* (Fig. 6).[12] Finally, the notion of coupling the pulling male, from the "Etruscan" slaughter scene in Mongez, with a horse, to form the group in the left foreground of the *Sardanapale*, might well have come from another *Rape of Proserpine*, reproduced by Gori (Fig. 8).[13]

Once the engraving in Mongez (Fig. 2) is accepted as a primary source of the *Mort de Sardanapale*, it becomes clear that Delacroix combined a classical or, more probably, pseudo-classical theme of slaughter with the dénouement of Byron's play. This fact, together with Beatrice Farwell's timely suggestion that Delacroix must have referred to Diodorus' text and might also have been influenced by Herodotus' description of a royal Scythian burial,[14] would seem to account for the major discrepancy between Delacroix's painting and Byron's text: that is to say, the addition of mass carnage to the lone death by fire of Sardanapalus and his favourite concubine.[15] It is possible

6. *Palazzo Pitti. Tableaux, statues, bas-reliefs et camées de la galerie de Florence et du palais Pitti, dessinés par Wicar, peintre, et gravés sous la direction de C. L. Masquelier, avec les explications, par Mongez.*

7. It is apparently no longer in the Uffizi Gallery or Pitti Palace, to whose Directors it is unknown. I am grateful to Francis Haskell for making inquiries of the Directors in person. I am further indebted to Dr. K. Sichtermann and Prof. Giacomo Caputo for their expert advice on the engraving, and especially to the latter, who also made a search in Florence for the original relief.

8. In a preliminary drawing for the corresponding figure in the *Sardanapale* (Fig. 3) certain features are closer to the engraving than to the final painting: the doubled-up leg rests on a tasseled cushion and the genitals are undraped.

9. Vol. III, pl. xxv, fig. 1. The original urn is now in the Volterra Museum.

My thanks are due to Mr. D. E. Strong, of the British Museum, for assistance in tracing the present location of this urn and others mentioned in this article. I am also indebted to him for elucidating the subject of Fig. 7, which Inghirami interpreted as *Amphiaraus taking leave of his wife on parting for the expedition against Thebes.*

10. Vol. III, pl. xxiii, fig. 1. The same Etruscan urn, which is now in the Volterra Museum, is reproduced by Francesco Inghirami in his *Monumenti etruschi o di etrusco nome . . . , Badia fiesolana dai torchi dell'autore*, 1821-26, pl. xcv.

11. *Ibid.*, pl. xix.

12. *Ibid.*, pl. liii. The urn is in the Volterra Museum.

13. *Op.cit.*, I, pl. lxxviii.

Gros's *Battle of Aboukir* (Salon 1806. *Musée de Versailles*) supplies a precedent in 19th century French painting for the presence in the lower corner of a Near Eastern scene of the front part of a startled horse in rich trappings set parallel to the picture plane, with its right leg raised and sharply bent.

14. *Loc.cit.*, pp. 68 and 69.

15. It does not, however, explain the important point raised by Miss Farwell (*loc.cit.*, p. 68), that in the descrip-

that a pictorial or theatrical source still unknown might help to bridge the gap between the restrained violence of the engraving and the wanton butchery of the painting, but in this respect the difference between the "Etruscan" slaughter scene and the *Sardanapale* at least leaves less of a gap to be filled by the artist's imagination than the difference between Byron's dénouement and Delacroix's painting.

The spatial anomalies also become more comprehensible in the light of the engraving. The steeply tilted foreground, which understandably provoked a contemporary critic to demand "sur quel sol la scène est-elle assise?,"[16] is seen to spring from Delacroix's thinking in terms of a bas-relief. The inaccurate perspective and the conflict between the frieze-like arrangement of much of the foreground and the predominantly diagonal bias of the whole picture, appear to be largely the result of Delacroix's attempt to impose a bold Baroque pattern on a design that was first inspired by the engraving of a relief; a relief which, however, being almost certainly a spurious antique, contained the seeds of a Baroque composition in the diagonal arrangement of the couch. It is a curious irony, not untypical of the period, that Delacroix, who considered his own art to be nearer to the true spirit of antiquity than David's, may well have found some license for the use of a Baroque diagonal in this engraving of what he would have thought was a genuine antique relief.

The major changes that Delacroix makes in adapting the engraving to his own use all contribute to reduce the lateral and two-dimensional emphasis of the relief and to reinforce the receding diagonal. He centers the foot of the couch and reverses its diagonal thrust to coordinate it with the main stream of action flowing from the right. He diverts this stream inwards along the diagonal by eliminating the powerful lateral movement of the figure in the center foreground of the engraving. He turns his corresponding figure inwards and transfers to it the vertical emphasis and naked buttocks of the figure in the center background of the engraving.[17] Only the right arm and shoulders of the latter figure are used, in modified form, for its counterpart in the *Sardanapale*. Thus Delacroix's figure, being set lower against the couch, is brought into line with the main diagonal, which it is made to emphasize by the extension of the left arm and the slant of the head.

Despite the militantly Romantic character of the completed *Sardanapale*,[18] which later prompted Gautier to make the basically sound remark that "on ne pouvait marcher d'un pied plus hardi sur la queue

tion of the *Sardanapale* in a supplement to the Salon catalogue, the figure preparing to hang herself in the center background is identified as Aïscheh, a character who does not appear in any known literary or musical version of the Sardanapalus story. Miss Farwell suggests that this character might have appeared in a play that Delacroix could have seen in London during his visit to England in the summer of 1825. I have been unable to find any indication of such a play in English newspapers and magazines of the period. Although further research on this point in French theatrical archives is much to be desired, it does not seem to me wholly improbable that Delacroix invented the character in order to give some meaning to the upraised arm of the figure in his painting, a gesture which was borrowed from the "Etruscan" relief and is largely meaningless.

16. See the article signed Ch. . . in *Le Moniteur Universel*, February 27, 1828.

17. Although sources other than Etruscan or pseudo-Etruscan are outside the main theme of this article, the further influence of Rubens on this pivotal figure in the *Sardanapale* should be mentioned. The pose of Delacroix's final figure is copied from one of his preliminary pastel studies, probably drawn from a living model (Louvre RF 29.666). But this pose was initially developed from two figures by Rubens: the foremost nude in the *Rape of the Daughters of Leucippus* (Alte Pinakothek, Munich), which Delacroix would have known from engravings; and the central nereid in the *Landing of Marie des Médicis at Marseilles* (Louvre), which Delacroix had copied in oils (Kunstmuseum, Basel. Reproduced by Raymond Escholier, *op.cit.*, I, opp. p. 52). In order to follow the evolution to the foremost nude in the *Sardanapale*, these two figures should be compared to one of Delacroix's preparatory drawings reproduced by Escholier (*ibid.*, opp. p. 221), and to the oil sketch for the *Sardanapale* (Louvre, *ibid.*, opp. p. 226).

The *Sardanapale* oil sketch that is now in the Louvre and once belonged to Baron Charles Rivet (whose name, it may be worth recording, could be seen on the back of the picture before it was relined in 1955), is no doubt the sketch which Rivet claims Delacroix executed in a few hours while under the impression left from reading Byron's play (see Achille Piron, *Eugène Delacroix, sa vie et ses œuvres*, Paris, 1865, p. 70—published anonymously). It is clear that whatever impressions from Byron may have gone into the sketch, they were already combined with recollections of Rubens and the "Etruscan" slaughter scene. In one detail the sketch owes more to the latter than does the final painting: the male in the right foreground wears what appears to be a metal helmet instead of a cloth headdress.

There is another oil sketch of a *Death of Sardanapalus* which is reproduced by Ulrich Christoffel, who wrongly identifies it as Delacroix's sketch in the Louvre (*Eugène Delacroix, der Maler, der Symbolist*, Munich, 1951, pl. 26). This is evidently the sketch that Robaut drew in his personal copy of his Catalogue of Delacroix's works in the *Bibliothèque nationale* (p. 58), adding the following unpublished comment: "On dit que des jours où Delacroix cherchait la composition [de *La Mort de Sardanapale*], Poterlet travaillait près de lui—et à un moment de découragement, Delacroix dit à son ami: 'Eh bien cherche moi ça sur une toile et fais comme tu l'entends.' ?? Poterlet aurait alors exécuté la toile dont je donne ci-contre les différences principales et qui ne portent que sur le second plan de droite et au centre. [He describes these differences, which correspond with those in the sketch reproduced by Christoffel.] Malgré le peu d'intérêt que présente cette louche esquisse, j'en donne un trait ci-contre en faisant ressortir les détails ci-dessus indiqués. Dimensions de cette toile $0^{m}45 \times 0^{m}53$ (Collection Cheramy, janvier 1890)."

See also J. Meier-Graefe and E. Klossowski, *La collection Cheramy. Catalogue raisonné précédé d'études sur les maîtres principaux de la collection*, Munich, 1908, in which this sketch is reproduced and attributed to Delacroix (No. 155).

18. I cannot propose a comprehensive definition of the term "Romantic." It seems that any single definition of a word that arouses so many associations in the mind is bound to be inadequate. But I think it would be generally agreed that the violent action of the *Sardanapale*, the exotic setting and costumes, the rich and varied coloring are, appearing in a French painting in 1827, Romantic, especially if they are considered in relation to the converse characteristics of Ingres's *Apotheosis of Homer* of the same year.

1. Delacroix, *La Mort de Sardanapale*. Paris, Louvre (photo: Archives Photographiques)

2. Slaughter scene (From Mongez, *Palazzo Pitti*, Paris, 1789-1814, IV, last pl.)

3. Delacroix, Study for *La Mort de Sardanapale*. Paris, Louvre

CLASS. III.

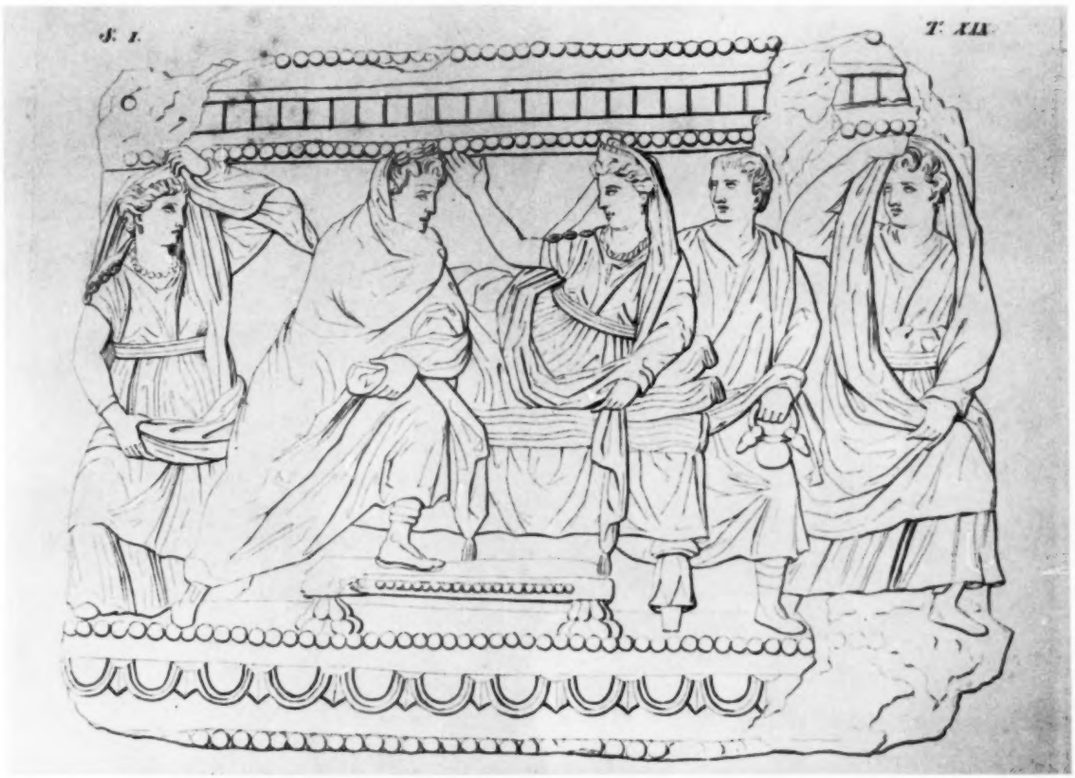
I.

4. Etruscan urn (From A. F. Gori, *Museum etruscum*, Florence, 1737-43, III, pl. XXV.1)

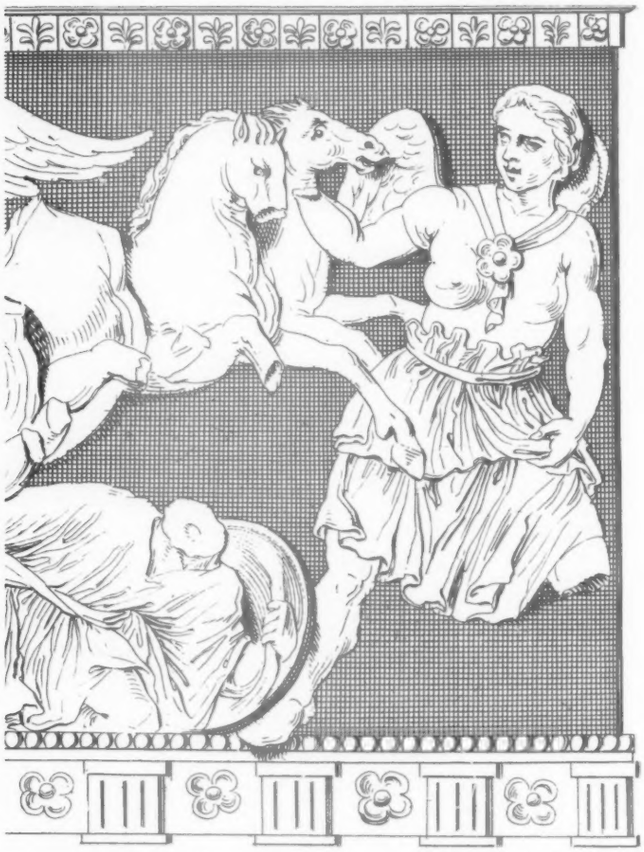
I.

5. Etruscan urn, Death scene, detail (From A. F. Gori, *Museum etruscum*, III, pl. XXIII.1)

6. Etruscan urn, *Rape of Proserpine*, detail (From Francesco Inghirami, *Monumenti etruschi o di etrusco nome*, Fiesole, 1821-26, pl. LIII)



7. Etruscan urn, *A Dead Husband Appears to His Wife to Call Her to the Underworld* (From Francesco Inghirami, *Monumenti etruschi*, pl. XIX)



8. Etruscan urn, *Rape of Proserpine*, detail (From A. F. Gori, *Museum etruscum*, I, pl. LXXVIII)

9. Delacroix, *Christ sur le Lac de Génézareth*. Cambridge, Fogg Art Museum, Harvard University (Courtesy of the Museum)

de l'école davidienne,"[19] it cannot be supposed that Delacroix felt his drawing on Etruscan sources was in itself a challenge to the academic, neo-classical tradition in which he had been trained. On the contrary, the presence of notes in the early sketchbook referring to Etruscan works implies that such models were approved of in academic circles. Etruscan remains seem, in fact, to have enjoyed much the same official status as Greek and Roman antiquities, and to have been included with them on an equal footing under the highly respected generic heading: Antique. It could hardly be otherwise, since there was often confusion between Greek, Roman, and Etruscan remains. Some idea of the French attitude to Etruscan art during the early 19th century can be gained from Mongez' commentary on the slaughter scene (Fig. 2). Although, as has been said, he thought the original relief was Etruscan, he heads his commentary: BAS-RELIEF ANTIQUE; and remarks that in it "on retrouve . . . le beau faire des Grecs, la sagesse et la simplicité de leurs compositions, et la vérité des poses qui caractérise leurs ouvrages." The idea that Etruscan art is the expression of a vital people unspoilt by Greek and Roman sophistication appears to be a more modern romantic concept; we may be reasonably sure that Delacroix's attitude to the Etruscans was nothing like D. H. Lawrence's.

It is of some importance to realize that Delacroix did not see himself as the provocative Romantic he seemed to many of his contemporaries and seems to us. Often provocative in regard to the neo-classical painters he knew himself to be, but not Romantic.[20] This distinction may seem artificial because what was anathema to the neo-classicists is what is now largely understood by the word "Romantic"—indeed an aid to defining it. It is, however, necessary to appreciate not only what in retrospect Delacroix appears actually to have been—namely, the greatest French Romantic painter of the 19th century—but what he thought himself to be; and he seems to have felt that he was a genuine classicist perpetuating classical values in a modern idiom.[21] Just as he thought Rubens truly Homeric and Ingres Homeric only in his pretensions,[22] so he seems to have deemed himself a propagator of the real spirit of antiquity, and David a frigid antiquarian.[23] The classical as interpreted by Delacroix could include not only calm and measure, but violent movement and intense emotion—characteristics which, when found in French painting of the nineteenth century, we tend to define as Romantic; but which when seen from Delacroix's point of view in, for example, the *Laocöon* can be defined with equal validity as classical.[24]

Delacroix's modes of thought, combining classical intent with unconsciously Romantic (as it now seems) expression, are not unlike Byron's when he wrote his *Sardanapalus*, which though full of characteristics that seem typically Romantic was intended by the author, as he says in the Preface, to demonstrate classical rules of drama. A closer literary parallel to Delacroix's attitudes is perhaps to be found earlier in Ducis, who, writing in 1803 of his revision of his earlier French adaptation of *Hamlet*, felt that he could emulate the Greek tragedians by re-writing Shakespeare in the style of Dante,[25] whom Madame de Staël was, significantly, to call "l'Homère des temps modernes."[26] By a not dissimilar mental process, Delacroix probably felt he was being Homeric when in 1827, basing his composition on an "Etruscan" relief and deriving his bright colouring and exuberant movement from the "Homeric" Rubens, he adapted to canvas a violent episode from Assyrian history, related by a Roman historian and dramatized by an English Romantic poet.

It was not in turning to an "Etruscan" source that Delacroix trod on the neo-classical tail, but in his interpretation and transformation of that source.

19. "Exposition du Boulevard des Italiens," *Le Moniteur Universel*, March 6, 1862.

20. Delacroix's distrust of the label "romantique" at the period of the *Sardanapale* is implicit in the last clause of the following letter of March 11, 1828: "Les uns disent que c'est une chute complète; que la *Mort de Sardanapale* est celle des romantiques, puisque romantiques il y a." (*Correspondance*, Joubin ed., Paris, 1935, I, p. 213.)

21. "M^me^ Sand . . . ne voyait qu'une opposition inexplicable entre la verve audacieuse du peintre et les sages doctrines littéraires qu'il professait; mais Delacroix était de bonne foi, il se croyait sincèrement classique en peinture comme en toute autre chose." (Piron, *op.cit.*, p. 27.)

22. "Rubens est plus homérique que certains antiques. Il avait un génie analogue: c'est l'esprit qui est tout. Ingres n'a rien d'homérique que la prétention." (*Journal*, Joubin ed., Paris, 1950, III, p. 43.)

Delacroix elsewhere defined "la qualité homérique" as "le cri de nature de la souffrance, la sueur du combattant ou du laboureur, l'atroce détail souvent poussé à l'extrême, le sang, les larmes, qui nous font des hommes." (Piron, *op.cit.*, p. 448.)

23. See, for example, Journal entries for January 25, 1857: "L'exécution de David est froide, elle refroidirait des idées plus élevées et plus animées que les siennes"; and March 5, 1857: ". . . toute sa hardiesse consistait à mettre à côté un fragment, pied, bras, moulé sur l'antique, et à ramener le plus possible son modèle vivant à ce beau tout fait que le plâtre lui présentait" (*Journal*, III, pp. 44 and 71).

24. Delacroix's attitude to the classical, as opposed to what he felt was that of the neoclassicists, is elucidated in some of his remarks on Poussin, which can be taken to apply to himself as well as to the subject of his reflections: "Poussin n'a pas imité les bas-reliefs et les statues par le côté matériel, comme on l'a vu faire de nos jours, c'est-à-dire qu'il ne mettait pas un soin scrupuleux au costume, aux usages purement extérieurs. Il n'a pas affecté une prétendue pureté, en cherchant à prendre pour ainsi dire sur le fait la forme d'un pli, d'un meuble, d'une coiffure. Ceci est l'art de l'antiquaire, mais non de l'artiste, qui doit remonter à l'esprit, au sens de ce qu'il s'approprie en l'imitant. C'est l'homme qu'il étudie à travers l'antique, et au lieu de s'applaudir de retrouver le *peplum* ou la *chlamyde*, il le fait de ressusciter en quelque sorte le mâle génie des anciens dans la représentation des formes et des passions humaines. Telle est l'imitation du Poussin." (Piron, *op.cit.*, pp. 317-318.)

25. See *Talma, Correspondance avec Madame de Staël*, Paris, 1928, pp. 70-71 (Letter from Ducis to Talma, October 24, 1803).

26. See Madame de Staël, *Corinne, ou l'Italie*, Paris, 1807, II, p. 3.

From the point of view of purely formal design, it is now clear, on the evidence of the "Etruscan" slaughter scene, that in the *Sardanapale*, as in the two major Salon paintings which precede it (the *Barque de Dante* and the *Massacre de Scio*), Delacroix is influenced to a marked degree by the neo-classical school's frieze-like manner of composition based on antique reliefs. But to a greater extent than ever before in a painting of comparable scale, he has tried to combine this inherited manner with a Baroque composition in depth. He may have failed to effect an entirely happy union between these opposites; that is perhaps one reason why he was dissatisfied with the *Sardanapale*. Later, though, he was to solve this problem of reconciling surface emphasis with depth. He seems to have done so in two ways. In a picture such as the *Entrée des Croisées à Constantinople* (Salon 1841. Louvre), he stresses surface by reducing linear perspective to a bare minimum, and attains depth mostly through color relationships and variations of texture or transparency. In some of the versions of *Christ sur le Lac de Génézareth* of the 1850's, on the other hand, he retains the Baroque diagonal of the *Sardanapale*, but counteracts its recession by tilting the whole composition (not merely the foreground as in the earlier painting) into an almost vertical plane, and by placing limbs, oars, and draperies parallel to the picture plane along the entire length of the diagonal. He thus preserves the spatial tensions of the *Sardanapale* but integrates them more fully. His manner of resolving these tensions emerges most clearly in a drawing for a *Christ sur le Lac de Génézareth* (Fig. 9). In the arrangement of elements parallel to the picture plane, he remains heir to the *Poussiniste* tradition as revived by the neo-classical school in which he had been trained; in the diagonal recession and dynamic movement, he continues the *Rubéniste* tradition to which he was drawn by temperament. These two currents, uneasily wed in the *Sardanapale*, he fuses into a new, unified style which was to excite the admiration of such diverse artists as Cézanne and Gauguin.

UNIVERSITY OF TORONTO

BOOK REVIEWS

WILHELM KOEHLER, *Die Karolingischen Miniaturen*, II: *Die Hofschule Karls des Grossen*, Berlin, Deutscher Verein für Kunstwissenschaft, 1958. Text, 104 pp.; Tafelband, 116 pls. DM 150.00.

The second volume of Koehler's great work follows a different plan from the first. It contains no analyses of the ornament and figure paintings like those that have made the volume on the School of Tours a model for the study of mediaeval styles. Only the material itself is presented, critically sifted and described in a catalogue of the manuscripts, with a short introductory chapter (pp. 9-17) on the place of origin and the dating of the works of Charlemagne's Court School. Tables of variants and agreements in the texts of the evangiles, prefaces, chapter summaries and divisions, provide criteria for the ordering of the manuscripts in time; the dating is clear, however, from the character of the script and decoration, except for the relative positions of the Harley and Abbeville gospels. Study of all the criteria—stylistic, palaeographic and textual—shows that Arsenal 599, Harley 2788, and the first hand of the Ada manuscript are an early group, coming immediately after the Godescalc and Dagulf manuscripts; Soissons (Paris, B. N. lat. 8850), Ada II, and the Lorsch gospels are later works. Abbeville seems to be after Harley, but this is uncertain; it was perhaps done at Saint-Riquier by artists and scribes trained at Aachen, where the abbot Angilbertus had been *minister capellae* in 791.

All eight manuscripts of this school (and the fragmentary miniature pasted into British Museum Claudius B.V) were probably made in a court scriptorium at Aachen. Koehler rejects the attempts to locate the school or particular books of this group in Mainz, Trèves, Metz, and Lorsch. He has also given up the name of "Ada" customary for the school, since the Ada of the Trèves gospels is first connected with Charlemagne as his sister in a document of the thirteenth century—the Carolingian records mention only one sister, Gisla. The origin of the school in a court scriptorium is indicated by the royal context of several of the manuscripts, by their luxurious aspect, with purple, gold, and silver, and by the script, which is in a new style that soon becomes canonical. The school comes to an end with the death of Charlemagne, whose personal initiative is felt throughout these works. The emperor's chapel in Aachen was the center for court scholars and theologians under a palace chaplain; it was associated with the chancellery where imperial documents were written.

The album of plates reproduces all the miniatures, canon tables, and initials, and many of the ornamented page borders, in their original size (with a few exceptions). Like the volumes on the School of Tours, it is an indispensable corpus for the study of early mediaeval art.

The reader will discover in the works of this Court school much that recalls twentieth century art, especially in the great freedom of representation. There is also a new earnestness and intensity, different from the smoothness of Hellenic and Byzantine art and attractive to our own age which has opened to expression impulses, feelings, and moods incompatible with the grace and measure of classic art. In this school appears for the first time perhaps that combination of the restless, the spontaneous, the clumsy, and the exalted, which stamps the later art of the Middle Ages. In assimilating Southern types of representation, particularly in the large closed compositions, these German artists invented some astonishing forms of surface design.

The great interest of the problem of the formation of the Court school, the renewed question of its connections with Italian art of the seventh and eighth centuries raised by recent studies of the paintings of Cividale and Castelseprio, make us regret the absence in Koehler's book of any treatment of the sources of this German art. (He had planned, I believe, to deal with this aspect in another work.) Here he has carried restraint in matters of interpretation to the point of withholding even mention of his views on the important miniature of the Annunciation to Zacharias in the British Museum (Claudius B.V), which he had developed in a masterly article in 1952.[1] From closely examined evidence he had inferred that this vestige of a lost manuscript came from an evangelistary and was copied from an Italian model of the second half of the sixth century—a result that, if correct, must be significant also for the history of Ottonian and Middle Byzantine art, since the illustrated evangelistary, unknown in or before the Carolingian period, is a typical book in these styles. He had asserted in the course of his argument that in determining the date and character of the Italian model—which was used by other artists of the Court school, especially for the small miniatures in the Harley and Soissons manuscripts—"the two hundred years between 600 and 800 can be safely excluded."

I am not convinced that the miniature belonged to an evangelistary or that it copies directly a work of the sixth century. In Koehler's line of reasoning not enough attention was given to the Gospel manuscript (part of a Bible originally), British Museum Royal 1 E. VI, which once contained as a frontispiece a miniature of the same scene of the Annunciation to Zacharias. The inscription alluding to it survives in the manuscript. As a work of the eighth century, produced in an English school with close relations to Italian painting—the frontispiece pages in gold and purple are a bridge between early Christian and Carolingian art—it compels us to consider the possibility that insular and Frankish art in the eighth century received from Italy recent or contemporary forms more advanced and more classical

1. *Journal of the Warburg and Courtauld Institutes*, XV, pp. 48-66.

than those of the drawings in the Gospels of St. Augustine from Canterbury (Cambridge, Corpus Christi College, MS 286), which represented for Koehler the typical pre-Carolingian imports from Italy in the North.

If this was the case, it would follow that the Carolingian revival was preceded and perhaps prepared by the renewed acquaintance of artists in the North with Mediterranean art in the middle and third quarter of the eighth century. (The original paintings of the Beatus Commentary on the Apocalypse, contemporary with the first works of the Court school in Aachen, would have belonged to this pre-Carolingian stage.) Working with extremely incomplete material, Koehler leaped over the gap of centuries by assuming a revival of the forms of the fifth and sixth centuries through direct copying of works of that period, which he was able to demonstrate in several cases with amazing ingenuity. But if, as there is reason to think, the tradition did not decline everywhere after the sixth century and older classical types were still cultivated in some centers in the Byzantine and Italian world beside the more common reduced forms, the Carolingian revival should be considered freshly and the continuity with the art of the eighth century taken into account as well as the copying of older works. The peculiarities of the London miniature in drawing, composition, and color may depend on Italian art of the same period; the grouping of the clustered figures in the broad narrow space reminds me of the mosaics of Santa Prassede, although the latter are more schematically drawn. In reconstructing the ancestry of the isolated London miniature in both Italy and the East, one should note the choice of the same subject as a headpiece for the Gospel of Luke in a New Testament manuscript of the thirteenth century from Verona (Vat. lat. 39, fol. 41^{r}) and also the resemblance of details to the versions of this scene in Coptic manuscripts (Paris, B. N. Copte 13; Cairo, Coptic Patriarchate Library, MS 105). In St. Gall MS 48, a Gospels in Greek and Latin written in the West in the ninth century, an inscription in the two languages by a Latin scribe refers to an image of the Annunciation to Zacharias beside a miniature of St. Luke.

It is a misfortune for our studies that Wilhelm Koehler did not live to complete his work. Another volume—on the Coronation evangeliaries—is in press, and it is hoped that the volume on the Franco-Saxon school can be put together from his notes. He had set himself a task so large and exacting, he was ruled by such scruples of scholarly completeness and precision, that to publish all the Carolingian schools of manuscript art on the model of his first volumes on Tours would have taken several lifetimes.

Koehler possessed a unique gift as an investigator in his ability to combine the disciplines of the art historian, the palaeographer, and the text critic. He was a man of exceptional sensibility and imagination who gave little weight to intuition unless it was supported by minute study of the evidence. He was justified by his results, which are solid and often more surprising than the bold guesses of less disciplined minds. His demonstration of hidden relationships is the more exciting to read because of its simplicity and logic. A drawing by Kokoschka, made for the Tietzes during Koehler's student days in Vienna, shows him a fastidious, sensitive, acute mind. He wrote about subtle things with an impressive clarity; his articles, the chapters of his books, are finely composed and even elegant in the unfolding of their argument. They are always pleasingly sober and make no claims to inspired insight. He approached the study of forms with the same probing objectivity as the non-aesthetic documents of history. This attitude does not conceal from us his intense response to qualities of art—he could not read so well the intimate structure of painting without his alertness to the beautiful, expressive, and original in works of art. A reserved, withdrawn nature, of stoic temperament, he was passionately concerned with art and its history. All his writings have the dignity of honest, selfless, critical research supported by a strong conviction of the value of the objects studied. His interest ranged over many more fields than is generally known, and he retained all his life a love of modern art. With a similar thoroughness and penetration he investigated works of early Christian art, Insular, Carolingian, Ottonian and Romanesque art, Flemish fifteenth century, Michelangelo, and Rembrandt. The study of art in our country is much the better for his teaching and great example.

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LARS-IVAR RINGBOM, *Paradisus Terrestris: Myt, Bild och Verklighet*, Helsingfors, 1958. Pp. 446; 208 figs. Summary in English. 4000 mk. (Acta Societatis Scientiarium Fennicae, N. S., C., I, no. 1)

In this review of Lars Ringbom's *Paradisus Terrestris* I shall confine myself to a discussion of some of the iconological aspects of Paradise. I am fully aware that such treatment is of necessity one-sided, and that it cannot do full justice, even critical justice, to some of the author's leading theories. The archaeological aspects of the discussion of the presumable site of Paradise must, I am afraid, be left to an archaeologist specializing in the Near East. At the same time, I must point out that in reading and rereading Ringbom's monumental work I have increasingly felt that the author has been led by certain pet notions that are not always to the advantage of a balanced presentation of the rich material that distinguishes his publication. He seems to be compelled, as it were, to subject his discussion to a Pan-Iranism that goes even beyond the theories that his teacher, Josef Strzygowski, has expounded with so much suggestive power.[1] I shall, therefore, focus on

1. Curiously enough, it was the author himself who in his *Graltempel und Paradies*, Stockholm, 1951, p. 326, suggested that it did not make sense: "die uralte, in aller Welt bekannte Sage von einem irdischen Land der Glückseligkeit um jeden

arguments that seem to militate against those sweeping generalizations by which Ringbom endeavors to project on to Persia in general and the site of Shiz in particular the manifold renderings in mediaeval art of Paradise.

To the reader of Ringbom's *Graltempel und Paradies* the author's preoccupation with the Iranian cult center of Shiz in the book under discussion does not come as a surprise. In the earlier book he dealt with the holy city of the Magi as a counterpart of Jerusalem, as well as with its role in the legends of the Holy Grail. This city of Shiz, which may be called the *leitmotif* of the present work, is probably identical with ruins on the mountain-plateau Takht-i-Sulayman, in the Persian province of Azerbaijan, which the American Institute for Iranian Art and Archaeology (under A. U. Pope) explored in 1937.

The identification of Paradise with certain geographical sites has been, through the ages, a time-honored and culturally significant game. There is, plainly, no reason why one should not admit Shiz to this *catalogue mythologuisé*. However, its claims should not be pressed to the exclusion of similar claims on the part of other cities, such as Rome and Jerusalem. Besides, sites other than cities have been referred to as Paradise. The imagination of poets, church fathers, geographers, and others has centered on landscapes with a tradition of religious distinction or association, places that were sacred, such as the Nile Valley, or secluded, such as the Pineta of Ravenna, or simply an inaccessible mountain shrouded in clouds. We may thus assume that such landscapes have, in turn, tinged the mythical power of imagination until, even in modern times, the word Eden has been commercialized to suggest any site away from the grayness of everyday reality. We might say that under the heading "Garden of Delights" a highly varied number of stage requisites have been grouped that, in their turn, can be combined in endless variations.

Ringbom's book falls into three main parts: I, Myth; II, Picture; III, Reality. I shall concentrate mainly on parts I and II.

Part I deals with myths concerning the Garden of Eden, the heavenly City of God descending on the last day to earth, and the future Paradise on earth. All these are treated as different aspects of the *paradisus terrestris*. At once we notice Ringbom's preoccupation with the City-Mountain combination, to the detriment of other, equivalent, Paradise elements, such as Garden, Valley, or Island. The description of Paradise in Genesis was, after all, the *locus classicus*; and although it leaves the imagination free as to certain aspects of Paradise, it seems clear that the Biblical Paradise consisted of a pleasant park equipped with an intricate system of irrigation and with no indication of a mountain, while its inner core was a Garden Enclosed, with nothing to suggest a fortified city. The general validity of this image is stressed just where we might speak of realistic ambitions, i.e., in the mediaeval *mappae mundi*. Here we encounter Paradise over and over again as a flat (at times walled-in) garden, as an island, or as a peninsula.[2] Of the two examples of world maps reproduced by Ringbom as his figs. 2 and 6—both, incidentally, late—the first shows Paradise as a garden with a fortified wall, but certainly not on a mountain; the second shows a real Paradise city on a mountain (under strong influence of the mediaeval Alexander-tales). Where, in the later Middle Ages, city motifs begin to assert themselves in representations of Paradise (in both literature and art), the prototype is invariably a typical mediaeval town.[3]

As Ringbom justly points out, there existed besides the quasi-realistic concept that regarded the Garden of Eden as an actual geographic site the allegorizing exegesis of the Bible.[4] The representations of the allegorical Paradise would show either a kind of schematic garden (as we find it in the Speculum Virginum manuscripts) or an intricate geometrical scheme whose center, the *medium mundi*, is occupied by a Personification of Paradise (as we find it for example in the De Laudibus Sanctae Crucis manuscript, Munich, Staatsbibliothek, Clm. 14159, fol. 5^{v}, Ringbom's fig. 4). The central figure of Paradise in this type of mediaeval allegorizing representation coincides with the holy city of Jerusalem, which, after all, in agreement with Biblical allusions and the texts of legends, did occupy the *medium mundi*. Thus we find Jerusalem represented for the first time in the *mappa mundi* of Oxford (A.D. 1110), although it can be shown that the concept is much older.

Next Ringbom treats of the interrelation between the Garden of Eden on the one hand and on the other of the Heavenly City of the Apocalypse. It is his contention that as soon as the Paradise that existed from the beginning of Creation and the Paradise as the Home of the Souls that stands at the end of the world are being identified with one another, an urbanization of the earthly Paradise takes place. This view has to be modified. In the vast majority of Paradise renderings

Preis aus einer bestimmten historisch-geographischen Wirklichkeit herzuleiten . . . denn schon als allgemeingültiger, menschlicher Wunschtraum ist das Land des Glücks vollauf begreiflich," a dictum that, *mutatis mutandis*, might be held against his own Pan-Iranistic notions.

2. A transoceanic paradise-continent, though rare, can be found for example in a Cosmas Indicopleustes manuscript (Rome, Bibl. Vat. gr. 699, fol. 40^{v}, 7th-9th century; C. Stornajolo, *Le Miniature di Cosma Indicopleustes*, Milan, 1908, pl. 7) and in Lambert of S. Omer's Liber Floridus (Paris, Bibl. Nat. suppl. lat. 10bis, fol. 34, end of 13th century; K. Miller, *Mappae Mundi*, 1895-98, III, pl. 8 on p. 48).

3. In my opinion there is no need to presume that the architecture of the "Paradisus" miniature in the 12th century Ghent manuscript of the Liber Floridus (Ringbom's fig. 206) was influenced by crusaders' memories of Shiz, as is suggested on p. 407. The same city decor is used for example in the ivory plaque in Orléans, Musée Historique (A. Goldschmidt, *Die Elfenbeinskulpturen*, II, 1918, pl. LXX, 193), dated 9th-10th century and thus decidedly pre-crusade.

4. The Church has never felt the need to take a stand in the dispute as to which of the two views was valid. Typically enough, St. Augustine, in his *Civitas Dei*, XIII, xxi, considers both views as acceptable. In the exegesis of the Reformation, on the other hand, the allegorical view was dropped in favor of the one that claimed reality for Paradise.

in the Apocalyptic visions, Garden and City Paradise, enriched by a number of further variations, exist either independently of each other or in combination. Here it may happen that the city will be used to indicate a higher degree of bliss, whereas the garden represents a lower rung on the ladder of salvation. It is, however, only in the later Middle Ages that the city motifs may assume a preponderant role.

In the second part of his *Paradisus Terrestris*, which deals with the Paradise images, Ringbom returns to the problem of the paradise mountain once more. He chooses for his discussion the apse mosaic in the basilica of S. Giovanni in Laterano (his figs. 18, 19), and assures us that the central zone offers a precise representation of the earthly paradise. It is distinguished by a conical mountain whose top is flattened out to accommodate a lake enclosed by a circular wall from which four streams issue. This, according to Ringbom, faithfully illustrates the view of Paradise that was current in the fourth century.[5] This is an ingenious theory that, however, is hard to prove or disprove, inasmuch as the state of preservation of the mosaic is anything but trustworthy. The parts that he uses for his Paradise argument cannot with certainty be ascribed to the time of Constantine.[6] Moreover other Early Christian paradise illustrations are abundant that do not even hint at a mountain lake but depict paradise in terms of a garden, as for example in the catacomb paintings. I feel similar doubts concerning a mountain paradise where the author discusses a late Byzantine Psalm illustration (his figs. 31, 32).[7] It seems to be impossible to speak in this case of a Paradise mountain, since what is represented is an oval-shaped World with a transoceanic Paradise (see above, n. 2), and in the midst of the World Sea the earth, shown as an oval tongue of land upon which we find a figure of Terra Mater. Ringbom interprets her as a Paradise goddess, related to the Iranian fountain goddess Ardvi Sura Anahita, the Persian equivalent of Artemis. Iranian art links her with rich vegetation and animals, which brings us to another Paradise-motif—the drinking deer at the waters of the *fons vitae*. Needless to say, this motif was much too ubiquitous to be a geographical signpost pointing at Persia.

Ringbom's tireless quest for evidence that will help support his archaeological fixation of Paradise in Persia yields a great amount of new and worthwhile material. Of course, the Paradise claim of the land between the Euphrates and the Tigris is common knowledge. Ringbom points out an equivalent Iranian sanctuary and makes it attractive by showing that it enjoyed a peculiar *Nachleben* in classical antiquity, serving as the prototype of the Roman nymphaeum. He refers to Porphyrius' *De antro nympharum* (third century A.D.), which speaks of a sanctuary built by Zoroaster in the faraway Persian mountains, a sanctuary that was *expressis verbis* designed as an abode for the nymphs. This might be associated with myths concerning the holy city of Nysa where the nymphs reared young Dionysus. Finally, the region where the Euphrates and Tigris rose was the place where the historical Alexander the Great on his journey in quest of the *paradisus terrestris* searched for the *fons vitae*. All these myths may, we are told, have influenced a more or less conscious imitation of Alexander's *Iter ad paradisum* in which the emperor Constantine may have been engaged, resulting in his preparations for a war against Persia. While this assumption fits in with the prevalent mood of politico-religious *imitationes Alexandri Magni*, we feel more than doubtful at the further conclusions by means of which Ringbom wishes to invest the Constantinian era with an all-pervading desire to relive an Iranian paradise-dream. Ringbom, in fact, finds all the elements of these mythical regions of the East (and more precisely of the holy city of Nysa, the home of Dionysus, as described by Philostratos) in the Mausoleum of Santa Costanza in Rome. He points out that it was built by Constantina in memory of her husband, Flavius Hannibalianus, who was murdered in the year 337. Hannibalianus' title, "Rex regum Armeniae," serves here as a handy peg to hang the Persian theory on. No doubt Bacchic allusions play a predominant role in the mosaic decorations of Santa Costanza; yet we should not forget that Robert Eisler has made it abundantly clear that they had played a significant part in the Christian catacombs of Rome before that time. Unfortunately it is just the portions that are meant to support Ringbom's main argument for a Persian character that are known to us only through Renaissance drawings. And what we see is by no means cogent. The fauna in the water zone, as rendered in the drawing by Francesco d'Olanda (Ringbom's fig. 72), would, indeed, be rather out of its element in the Persian alps, above all the unmistakable octopus. But even where we still have portions of the original mosaic well preserved we are assailed by doubt. The portrait bust of a man (cf. fig. 69), identified by Ringbom as possibly Hannibalianus, can be "identified," in the words of Karl Lehmann, "with many members of the Constantinian family . . . so ambiguous is their character."[8] It would lead too far to recapitulate Ringbom's style-analytical arguments (such as comparisons of motifs in Santa Costanza with Sassanid silver—motifs that, after all, belonged to a style of such international validity that we might refer to them as Hellenistic in the first place). Even if we were to admit the possibility of direct influences from Persia, very little would be gained for Ringbom's

5. I might in this context point out that the two figures within the wall, who are called Peter and Paul, are most likely Enoch and Elias; this would indeed be in keeping with the guided tours of heaven that are described in the Apocalyptic visions. For example, in the 4th century *Visio S. Pauli*, Paul is merely an onlooking visitor—as Peter was in the earlier *Apocalypse of S. Peter*—while Enoch and Elias belong as it were to the paraphernalia of Paradise.

6. See G. J. Hoogewerff, "Il mosaico absidale di San Giovanni in Laterano," *Rendiconti della pontificia accademia romana di archeologia*, XXVII, 1952-54, pp. 297-326.

7. MS Munich, Staatsbibliothek, slav. 4, fol. 33r.

8. Cf. "Sta. Costanza," ART BULLETIN, XXXVII, 1955, p. 196 n. 27.

theories, inasmuch as the distinguishing characteristic of the art of the Constantinian phase seems to us to lie in its ability to assimilate into a new form a great variety of meaning-charged forms from all the known corners of the world.

Ringbom engages further in a painstaking analysis of Christian paradise-motifs as they occur on sarcophagi, baptisteria, baptismal fonts, and canon-tables, and compares them with Iranian prototypes. As regards the canon-tables, he follows Strzygowski's thesis, which explains the Eusebian Canon arcades, as in the Etschmiadzin Gospels (A.D. 989), as derivatives from (lost) Avesta illuminations, to which he adds that those, in turn, were inspired by the water-sanctuary of the Goddess Ardvi Sura Anahita that King Shapur II of Iran erected in the beginning of the fourth century A.D. Here we must hesitate in following the author, for it is not very likely that Bishop Eusebius, although well versed in classical thought, would have had recourse to the pagan representations of the Avesta illustrations. The question of the origin of the canon-tables still has to remain unanswered.[9]

Related to the canon arcades are other representations of Paradise that Ringbom derives from a Sassanid Palace of Paradise built by Shapur II on the site of his sanctuary to Ardvi Sura. We are referred to a fourth century fresco in the dome of a grave chapel in Bagawat in Egypt (Ringbom's fig. 117). However, double arcades are by no means the privilege of Sassanid architecture; and as to the so-called ivan-hall, this seems rather to be an entrance crowned by a semicircular tympanum, as in the Porta Aurea of Diocletian's Palace at Spalato.[10]

The third and last part of Ringbom's book stresses once more the author's top-heavy claim for the exclusive right of Shiz to be regarded as the true manifestation of Paradise. As I pointed out at the beginning, this part should be discussed by a specialist in the Near Eastern field.

I think that the time has come to subject the Paradise material to a careful and unbiased analysis.[11] That the reader should not turn to Ringbom's studies on Paradise to find this has, I think, become sufficiently clear. At the same time the readers of this book will, I trust, agree with me that it is indispensable to every art historical library for the unparalleled wealth of material that has been spread out before us, including a thorough bibliography. And, finally, it is a delight as well as a challenge to read a detective story, even when the reader knows from the beginning where the *corpus delicti* lies buried.

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WILLIAM S. HECKSCHER, *Rembrandt's Anatomy of Dr. Tulp; an Iconological Study*, New York, N.Y. University Press, 1958. Pp. 283; 21 figs.; 47 pls.; color frontispiece. $15.00.

To read Professor Heckscher's book on *Rembrandt's Anatomy of Dr. Nicolaas Tulp* is, indeed, a very exciting experience. Remaining true to the opening paragraph of his study, this book offers "a great variety of material and documentation." Professor Heckscher's approach through the use of documentation, "representational as well as literary," as the basis for an iconological study of one work of art in an attempt to discover the atmosphere in which it was created is a welcome and important change in method from the purely stylistic analysis of paintings that, all too often, is employed as the only means in achieving a so-called deeper understanding of a work of art. Professor Heckscher proves himself well equipped for the goal he has set for himself and brings into play a fantastic knowledge of mediaeval, Renaissance, and Baroque artistic and literary sources. However, as C. E. Kellett has pointed out in his review,[1] there are some rather strange omissions in Heckscher's discussion, which is meant to cover the artistic and scientific tradition of the anatomy "from about 1480 to about 1770." For me, among other things, it is curious that Rembrandt's *Anatomy of Dr. Deyman*, Amsterdam, Rijksmuseum, is barely touched upon, while Hogarth's "Penal Anatomy of Nero Wolfe" is discussed at great length.

Heckscher has divided his book into sixteen short chapters following his plan as stated in the Introduction to employ literary as well as representational sources in order to "deepen our appreciation of this one work of art." The profuse annotation makes fascinating reading in itself. These footnotes cover such varied subjects as a little-known seventeenth century diary entry concerning the duties of Dutch organists (note 21) and the fact that as late as 1677 "medical demonstrations for midwives were ridiculed as a novelty in the medical comedy" (note 130). The notes are followed by three Appendices[2]—the third being of

9. Cf. C. Nordenfalk, "The Beginning of Book Decoration," *Beiträge für Georg Swarzenski*, Berlin-Chicago, 1951, pp. 9-21.

10. Cf. C. Diehl, *Manuel d'art byzantin*, I, 1925, p. 115, fig. 45.

11. The reviewer is engaged in writing a thesis in which the main accent will lie on the grouping of this material into categories. This, it is hoped, will underscore the changeability of the elements that constitute what might be called the Paradise *immobilia* without, of course, disregarding certain stabilizing factors.

1. For an analysis of the medical aspects of this book, see the review by C. E. Kellett in *The Burlington Magazine*, CI (1959), 150ff. Mr. Kellett brings a detailed knowledge of the history of medicine into play. His discussion of the aforementioned omissions (p. 151), his evaluation of Tulp's actual contribution to the field of anatomy (p. 152), and his discovery concerning Aris Kindt's left arm (p. 152) are extremely valuable criticisms of Professor Heckscher's book.

2. Appendix I presents a document of 1641, which tells about an unidentified artist who suffered from an "Imaginary Softening of the Bones." In Chapter IX of the text Heckscher suggests the possibility that Rembrandt might have been Tulp's patient. This is an intriguing speculation, but if the artist in question was forced to spend the winter in bed, as the docu-

extreme importance. Here Professor Heckscher, with the help of Dr. I. H. van Eeghen, has discovered, in the City Archives of Amsterdam, that Dr. Tulp was the only man in the painting with a medical degree, and that, contrary to a tradition started in 1693, this scene does not represent the foremen of the Amsterdam Guild of Surgeon-Anatomists. Heckscher informs us that only two men in the painting, Adriaan Slabraen and Jacob de Wit, were foremen in 1631-1632, and concludes, quite justifiably, that the painting must have been commissioned privately by Tulp and those portrayed. The Appendices are followed by a very careful choice of plates, though one would certainly have expected a larger and more readable reproduction of the infra-red photograph of the *Anatomy of Dr. Tulp* on which a major argument is based. The Bibliography, placed between the Appendices and the photographs, is an incredible source of information for historians of all types, medical men, and students of literature.

In the Introduction, Professor Heckscher sets down the aims of his study and advances the idea that Rembrandt's painting is based on the more important goals of art as expressed in the art theory of Franciscus Junius. Heckscher cites Junius' idea that paintings must "teach, delight and moove," and says that this dictum "reflects an attitude" that Heckscher calls "baroque." A surprising statement follows this in which Heckscher writes that he has done his best "to steer clear of the professional terms of modern aesthetics and of modern connoisseurship, which I consider one of the most powerful barriers that we have placed between ourselves and historical art. My use of the word 'baroque,' however, shows that I am neither able nor willing to adhere to my self-imposed rule with absolute rigidity." From this statement it is difficult to ascertain whether Heckscher is criticizing modern connoisseurship or the use of the terms Renaissance, Baroque, etc., to describe chronological divisions in the history of art. If he means the latter, and I think that he does, this criticism is justifiable. However, one is somewhat surprised when one considers his definition of the "baroque style."

He has chosen three words, "teach, delight, and moove," all of which can be and have been used to describe artistic efforts from the Renaissance through the eighteenth century. Professor Lee has demonstrated that painting, according to Horace,[3] should instruct as well as delight, and that this was accepted by most Renaissance and Baroque writers.[4] For all of Professor Heckscher's implied criticism of contemporary definitions of the Baroque, one would think that his definition of the Baroque, especially if it is meant to help one interpret Rembrandt's painting, would be a great deal more accurate and characteristic of the period under scrutiny. Because this definition can easily be applied to a number of periods in the history of art, I have grave doubts that Rembrandt specifically chose to use Junius' rather ambiguous statement as criteria for the *Anatomy Lesson*. I am also not completely convinced that the young Rembrandt was acquainted with Junius during the painter's first years in Amsterdam, as Professor Heckscher implies. Such a definition of the Baroque is so loose that Rembrandt might have come across it if and when he became aware of earlier Italian art theory, perhaps through his teachers Pieter Lastman and J. Pynas, who had studied in Italy. Secondly, the *Anatomy Lesson* is certainly not the first painting by Rembrandt to contain any of the above three characteristics.[5] However, the author is quite right in supposing that Rembrandt, upon receiving the commission, immediately began studying earlier representations of this theme and those akin to it before starting his painting. Heckscher, using early woodcuts known to historians of anatomy as well as compositions from the fifteenth and sixteenth centuries such as martyrdoms, Justice pictures, and Lamentations, very cleverly proves this point in Chapter XI.

In this same Introduction, Heckscher makes the interesting speculation that Rembrandt was most likely introduced to Dr. Tulp by Caspar Barlaeus and through the latter's friendship with Gerard Vossius to Franciscus Junius. For me it is unlikely that a famous professor, recently removed from Leiden and given one of the two chairs at the illustrious school in Amsterdam, would have known Rembrandt during his early years in Leiden. That Rembrandt was involved with the intellectual circles in Amsterdam soon after his arrival is also quite doubtful when one considers Rembrandt's rejection of a University education in 1620 as well as the works he executed during the 1630's.

ment tells us, it certainly would have cut down his productivity. Rembrandt seems to have produced as much in 1641 as in other single years from the late 1630's and early 1640's.

3. R. W. Lee, "Ut Pictura Poesis: the Humanistic Theory of Painting," ART BULLETIN, XXII (1940), p. 226. See also S. Slive, *Rembrandt and his Critics*, The Hague, 1955, pp. 37f.

4. The idea that art should instruct man is found in the writings of Alberti, Leonardo da Vinci, Dolce, Lomazzo, and others (R. Lee, *op.cit.*, p. 227 n. 135). Alberti also writes about beauty and how it gives pleasure to the eye (A. Blunt, *Artistic Theory in Italy 1450-1600*, Oxford, 1956, pp. 16f.). The question of art as having the ability to move the spectator was discussed in great detail during the sixteenth century (*ibid.*, pp. 126f., 144).

5. For example Rembrandt's 1629 *Judas Returning the Pieces of Silver*, London, Lady Normanby Collection, was praised in Huygens' autobiography, written between 1629-1631, for its ability to move the spectator. For the complete documentation see S. Slive, *op.cit.*, pp. 9f., 15f. That elements of Junius' art theory were in the air prior to his work in the 1630's is further emphasized by the statement in Sir Henry Wotton's book on architecture, *The Elements of Architecture*. Wotton, the British Ambassador to The Hague, published his writings in 1624, and states that a work of art must have harmony but must also give joy. He also uses one of Junius' terms when he says "The end is to build well and well building has three conditions: commodity, firmness and delight." For this quotation and more about Rembrandt and seventeenth century thought see J. G. van Gelder's article "Rembrandt en de Zeventiende Eeuw," *De Gids*, CXIX (1956), p. 404.

Certainly Rembrandt was well aware of the classics from his years in the Latin School, but complicated allegories and the like, which were so much a part of the intellectual circles of the seventeenth century, played a very small if not insignificant role in his oeuvre. Rembrandt was interested in portraying human feelings and emotions rather than intellectual riddles. His self-portraits in the 1630's, when compared with the portraits he made of the learned men of The Netherlands, show Rembrandt, in general, dressed in gay costumes with strange headdresses and decorations, quite in contrast to the very somber dress of his intellectual contemporaries.[6] If Rembrandt had been part of the intellectual circle in Amsterdam, one would think that he would have represented himself in the more sober and unbohemian manner of this circle.

To me it seems more likely that Rembrandt met Dr. Tulp through Hendrick van Uylenburgh, one of the most important members of the "new" profession of art dealers,[7] with whom Rembrandt lived upon arriving in Amsterdam in 1631. Uylenburgh had very important connections in Amsterdam during these years and certainly must have introduced his young protégé to the wealthier class of burghers in Amsterdam. As H. E. van Gelder suggests,[8] it was probably on Uylenburgh's recommendation that Rembrandt received his first documented commission in Amsterdam, the monogrammed and dated 1631 *Portrait of Nicolaas Ruts*, Frick Collection, New York. It also must be remembered that Rembrandt did not come to Amsterdam as an unknown artist, but that as early as 1628 Aernout Buchel wrote that the Leiden miller's son is highly, but prematurely esteemed;[9] that Constantin Huygens, in his autobiography of 1629-1631, praised Rembrandt;[10] and that J. Orlers, the mayor of Leiden writing in 1641, speaks of Rembrandt's success during his Leiden period.[11] From this one can conclude that Rembrandt came to Amsterdam with some reputation as a painter and that his reputation was further enhanced by the portrait of the Amsterdam merchant *Nicolaas Ruts* in the Frick Collection and by the *Portrait of a Learned Man*, Hermitage, Leningrad.

In Chapter 1, Professor Heckscher writes about the actual painting, its condition after a recent cleaning, and in a very interesting way connects the poster or document on which Rembrandt's signature and a date of 1632 appear with printed announcements or ordinances issued by the Guild of Surgeons in Amsterdam.

The author's discussion of the anatomical chamber in this same chapter seems a bit questionable. He strongly suggests that Rembrandt has represented the actual chamber in which Tulp performed as well as the chamber in which all Amsterdam anatomies took place from 1619-1639. However, an examination of Rembrandt's paintings from ca. 1631 leads me to believe that this is the same imaginary type of architecture that the artist used so often at this time.[12] Earlier in the Introduction Heckscher writes that the anatomical theater of the seventeenth century was designed to hold some two or three hundred spectators, and that one must imagine a large audience in Rembrandt's painting. Heckscher writes that "we cannot doubt its presence as we fasten our attention on Dr. Tulp; he clearly addresses himself to persons outside his inner circle. His eyes roam over that part of the created illusion that we may describe as 'our side' of the picture plane." If one studies the architecture in the painting, it becomes very difficult to see where this imaginative audience of Professor Heckscher's could be seated. On both sides, it seems to me that the arches and columns continue beyond the picture frame like the nave of a church and that Tulp, who faces off to the left, could not possibly be contacting an audience, or if anything, the audience is the spectator and not a specific group of two to three hundred people.

In this same discussion of the anatomical chamber, Professor Heckscher writes about Rembrandt's use of chiaroscuro as being interpreted in an entirely new way in the *Anatomy Lesson*. Heckscher states that Rembrandt follows Junius' advice to avoid "the paintings which loosely hitch white and black, one to the other, have the appearance of a white marble floor or a checkerboard," and that this idea of subtle transitions from dark to light and light to dark appears for the first time in Rembrandt's *Anatomy Lesson*. I would seriously doubt this as it seems to me that there are a number of examples in Rembrandt's work from the 1620's when he was experimenting with the new Caravaggesque lighting ideas brought back to the Northern Netherlands, in the main, by the Utrecht School, and very likely passed on to Rembrandt via prints executed ca. 1625 by Cornelis Bloemaert. The soft transitions of light and shadow are already evident in such works from Rembrandt's Leiden period as the *St. Paul in Prison* of 1627 in Stuttgart or a second painting of the same subject in the Germanic Museum, Nuremberg, and the *Money Lender* in the Staatliches Museum, Berlin-Dahlem.[13] Rembrandt seems to continue the chiaroscuro ideas from his Leiden days in the *Anatomy Lesson*, but here for the first time he masters completely the very dramatic light effect that helps to emphasize the variety of positions of the heads and the individual reactions. Rembrandt, through the strong diagonal and the light from an unknown source, creates an extremely dramatic and penetrating moment.

6. Cf. *Portrait of Maurits Huygens*, Kunsthaile, Hamburg; *Portrait of Jan Hermansz. Krul*, Gemäldegalerie, Kassel; *Portrait of a Learned Man*, Hermitage, Leningrad. See Heckscher, p. 21, for a different interpretation of Rembrandt's self-portraits.

7. H. E. van Gelder, *Rembrandt*, Amsterdam, n.d., p. 311.

8. *Ibid.*, p. 311.

9. S. Slive, *op.cit.*, p. 8.

10. *Ibid.*, pp. 10, 14ff.

11. *Ibid.*, pp. 35f.

12. For example the *Presentation in the Temple*, Mauritshuis, The Hague, and the *Saint Anastasius*, National Museum, Stockholm.

13. For a more detailed discussion of Rembrandt's chiaroscuro see J. Rosenberg, *Rembrandt*, Cambridge, Mass., 1948, pp. 192ff.

Heckscher continues his discussion of the composition and puts forth the idea that two of the figures, Jacob Koolvelt, on the far left, and Frans Loenen, who is placed in the highest position, were not originally part of Rembrandt's composition. Heckscher calls them "somewhat anemic" and writes that they are "the only ones seen in a strangely unspatial manner." It seems to me a bit dangerous simply to eliminate two figures from a painting for such reasons without really proving one's point, especially if one compares these two men with portraits by Rembrandt from about the same time. For example, the figure of Jacob Koolvelt with its pudgy face, soft hair, and deep-set eye is very close to the 1631 *Portrait of Christian Paul van Beresteijn* in the Metropolitan Museum of Art, New York, while the smooth quality of the face with soft hair brings to mind the 1632 *Portrait of Lysbeth van Rijn* in the National Museum, Stockholm. The 1631 *Portrait of Nicolaas Ruts*, Frick Collection, New York,[14] has much the same intensity and modeling of the face and beard as one finds in the representation of Frans Loenen. There are several other portraits from 1632 that compare favorably with the Loenen likeness, such as the *Portrait of Marten Looten*, Getty Museum, Los Angeles. Not only do I disagree with Professor Heckscher concerning the elimination of the two figures in the composition, but I also feel that the weakness of the composition can be attributed, in part, to Rembrandt's youth. How magnificently he changes the type of anatomy known from the past, which as Heckscher so rightly states Rembrandt investigated, and arranges the figures around the diagonally placed body of Aris Kindt! This change, plus his dramatic use of light and shadow and his deep penetration of each individual portrayed is enough to set the picture off as a milestone in group portraiture. The fact that Koolvelt is cramped and cut off by the frame is certainly not un-Baroque in concept. In Chapter IV Heckscher picks up this discussion once again, repeats part of his earlier argument as to why Koolvelt and Loenen do not belong, and adds the statement that Koolvelt repeats the position of his colleague in front of him, who also blocks Koolvelt's view. This blocking off of Koolvelt's view seems to be a problem which Rembrandt finally resolved in the 1662 *Syndics*, Rijksmuseum, Amsterdam, where the second figure from the left, instead of remaining seated and blocking off his colleague on the far left, rises and steps back behind the table, therefore, avoiding a sense of crowding or of the blocking off of the figure in the left corner.[15]

In the second chapter Heckscher writes about the role played by the human eye in the *Anatomy Lesson* and states that "the intensive staring is unparalleled in any other of his portraits" and that perhaps Dr. Tulp suggested this as a means of expressing "inner emotions." Heckscher discusses the human eye and writes that it "was considered eminently suited for emotion-expressing and emotion-inducing tasks." The only problem here is that Rembrandt's keen interest in the use of the eye as a window to man's emotions did not begin with the *Anatomy Lesson*. One finds intensive staring in a number of his works prior to 1632.[16] Once again, I am inclined to believe that Rembrandt did not need the contact with Tulp or Junius to further his ability to portray human emotions and that his search and study for the key to the individual mind, a study that preoccupied him constantly throughout his life, were not so strongly affected by the intellectual circles of Amsterdam as Professor Heckscher would like us to believe.

In this and the next chapter, following his initial premise of attempting to see the painting as "an unchanging mirror of its cultural ambient," the author explains plausibly why Rembrandt was commissioned to paint a specific anatomy lesson and he brings in the very interesting social aspects of such an event. Here Professor Heckscher's knowledge of seventeenth century Amsterdam is delightfully brought into play. Among other things, he very cleverly compares the functions of the anatomy lesson with the organ recitals of Jan Pietersz. Sweelinck. Heckscher also discusses the architectural history of anatomical theaters and brings to light the fact that in the beginning, in Protestant dominated areas, a majority of the buildings containing such theaters were chapels. One also finds a short discourse on the financial aspects of the annual anatomy demonstration including the fact that tickets for these lessons introduced the idea of selling tickets a number of years before the ordinary theater began to employ this practice. Professor Heckscher, with good reason, supposes that Rembrandt's *Anatomy* of 1632 must be closely tied up with the dramatic theater and sees the *Anatomy* as a dramatic play with three closely connected acts—the execution of the criminal, the formal public anatomy, and the semi-private guild banquet and torch parade.

In Chapter IV Heckscher, among other things, makes a very convincing proposal concerning the iconography of light and shadow and its possible application to the *Anatomy Lesson*. However, I find it somewhat difficult to believe, as Heckscher suggests, that the concentrated light effects of the painting are actually achieved by a chandelier carrying twelve to fourteen tapers or lanterns as was customary for the night lighting of anatomy lessons. The concentration and strength of the light and shadow areas are far too strong for twelve or fourteen tapers. With candlelight there would be a greater unevenness in the light and much softer transitions from the areas of light to shadow which one only finds at the feet and head of the corpse while the contrasts between the dark robes of

14. Heckscher (p. 21) omits this portrait from his list of documented portraits from the year 1631.

15. H. van de Waal, "De Staalmeesters en hun legende," *Oud-Holland*, LXX (1956), 84f.

16. For example the 1629 *Self Portrait*, Munich, Bayerische Staatsgemäldesammlungen; the 1629 *Judas Returning the Pieces of Silver*, London, Lady Normanby Collection; the ca. 1630 *Raising of Lazarus*, on loan to the Rijksmuseum, Amsterdam; the ca. 1630 *Supper at Emmaus*, Paris, Musée Jacquemart-André.

the men and the white body of the thief are extremely sharp and almost in relief. This strong concentration of light from an unknown source, which emphasizes individual emotions and gestures, is, indeed, reminiscent of Caravaggio's light as found, for example, in the *Madonna of the Rosary*, Vienna, Kunsthistorisches Museum, which was, incidentally, in the Netherlands until 1786 when it was purchased by the Emperor Joseph II.[17] That Rembrandt knew this painting is unlikely, but, of all the Netherlanders using chiaroscuro effects, he alone approaches the revolutionary Italian. The light and the imaginary architecture further emphasize the fact that this painting does not represent an actual moment but that Rembrandt commemorates the anatomy of January 1632 in a highly imaginative and original way using iconographical motifs from the past.

In Chapters V-IX, the author discusses, in an extraordinarily learned and exciting piece of research, the basic earlier forms of the anatomy lesson and their relation to theory and practice in the Renaissance and offers several extremely penetrating notions concerning Rembrandt's relation to earlier traditions. In this discussion in Chapter V, the author takes us back to a recently discovered fourth century fresco found in a private cemetery just off the Via Latina Antica in Rome, which may very well be a classical representation of a public anatomy.[18] Heckscher then leads us through the Middle Ages and the Renaissance, concluding, after having proved his point, that the anatomy as we know it today is a Renaissance invention though stemming from the mediaeval period. Heckscher's treatment of the sources for anatomy compositions is exceptionally clear. Particularly so is his idea that the anatomy combines the concept of the lamentation with that of the martyrdom. It is this field of iconography in which Heckscher's book really excels and in which his erudition comes to the fore.

The chapter entitled "Rembrandt as Heir to the Northern Renaissance" has a somewhat dubious heading in that as far as painting is concerned it is questionable that there was a real Renaissance in Dutch and Flemish art. The examples that Professor Heckscher cites are either from the late mediaeval tradition or from the northern *maniera* style. Heckscher's comparison of Roger van der Weyden with Rembrandt is certainly convincing, as are the observed quotations from Heemskerck and Lucas van Leyden.[19] His discussion of Rembrandt's *Danae*, Hermitage, Leningrad, and its allusion to late fourteenth century religious texts where the story of Danae and the Golden Shower is seen as a prefiguration of the immaculate conception of Jesus is cleverly introduced into the text. However the statement that "Rembrandt, and he alone among the many who represented the subject in the sixteenth and seventeenth centuries, turned the golden shower into flashes of mysterious light," is inaccurate. Frans Floris' print representing *Danae* certainly helps to prove this,[20] for here the goddess reclines on a couch and a heavenly ray of light enters the scene from the heavens with no trace of coins whatsoever. A more careful study of sixteenth century prints and drawings will demonstrate, I believe, that very often mediaeval ideas were carried on into the sixteenth century and from there to the seventeenth century rather than skipping from the fifteenth to the seventeenth and going under the heading of a revival. In any case the author should be praised for his inclusion of the fifteenth and sixteenth centuries in relation to the *Anatomy Lesson*—a method of study which would prove extremely fruitful if applied to other works of Rembrandt.

Professor Heckscher's final chapter is a brilliant and provocative interpretation of the meaning of Rembrandt's painting. It is here that he sets forth the notion that Rembrandt's *Anatomy* is really a triumph over death and sin. The author attempts, and I think quite successfully, to prove this through a very skillful analysis of the iconography. He cites the "concha" that not only isolates Tulp from the others as the main personage but also, and of far greater significance, distinguishes him, following a long iconographic tradition beginning with classical antiquity, as the source of all wisdom. For Heckscher, however, the "concha" had even a more precise meaning for Rembrandt. He likens the relationship between Tulp and the dead thief Aris Kindt to a Renaissance tomb memorial type in which the bust of a famous man was placed in a shell-like niche in triumph over the dead body which lies beneath the niche portrait. Citing a number of convincing and varied examples of this arrangement, the author then concludes that Tulp must be seen in triumph over the corpse, and that the picture celebrates the victory "of communal science over the egotistical ignorance of sin."

Heckscher's book is an exceptionally learned discourse on the theme of the anatomy. It is a book that often repeats itself and in which the discussion of the actual painting by Rembrandt is often disappointing. There are a few small errors that have no bearing on its quality, such as the identification of figure 13 as a woodcut instead of a copper engraving.[21] Pl. III-3 on p. 98 should read Pl. III-4, and Pl. XXXIII-40 was not originally executed in 1650 by F. de Wit after a drawing by J. C. Woudanus (Woudanus died on February 7, 1615). The Woudanus drawing was en-

17. For the documentation see W. Friedlaender, *Caravaggio Studies*, Princeton, N.J., 1955, pp. 198ff.

18. For a detailed analysis of this fresco and its meaning see C. Proskauer, "The Significance to Medical History of the Newly Discovered Fourth Century Roman Fresco," *Bulletin of the New York Academy of Medicine*, XXXIV, No. 10 (1958), pp. 672-686.

19. For still another quotation by Rembrandt from Heemskerck see W. Sumowski, "Einige Frühe Entlehnungen Rembrandts," *Oud-Holland*, LXX (1956), p. 109, figs. 1 and 2. A more recent discussion of Rembrandt and the sixteenth century by J. Bruyn (*Rembrandt's keuze van Bijbelse onderwerpen*, Utrecht, 1959) has since appeared.

20. This print can be found in the Albertina Collection, Vienna (LIV-1-page 112).

21. Brought to my attention by my colleague Mr. Leonard Baskin.

graved by B. Dolendo and published by J. Marcey in 1609; and in the following year (see Heckscher, Pl. III-4—wrongly dated 1616) W. Swanenburgh also made an engraving of the Woudanus design, which was published by And. Cloucq (or Clouck).

This reviewer feels that Professor Heckscher's book as a whole is an exceptional piece of scholarly research and a work that, particularly for its literary and iconographical material, should be of great fascination as well as use to historians of art.

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T. S. R. BOASE, *English Art, 1800-1870*, New York, Oxford University Press, 1959. Pp. 376, 12 figs.; 97 pls. $11.50. (Oxford History of English Art, X)

During recent years English art has been receiving considerable attention from scholars, particularly in several large-scale cooperative projects. *The Pelican History of Art* has thus far given five volumes to painting, sculpture, and architecture in Britain; at least eighteen volumes of Nikolaus Pevsner's monumental *Buildings of England* are now available. The most comprehensive series is *The Oxford History of English Art*, of which six of the intended eleven volumes are in print. The last to appear, by T. S. R. Boase (who is also the general editor for the whole series) is devoted to the period from 1800 to 1870.

Nineteenth century British art is not an easy topic to write about, for at least two reasons. The general course of development during the period has not been charted in any detail by art historians. Several excellent studies involving the architecture have been published within the last couple of decades, and some sense of the issues involved for that art is beginning to emerge. Also, the major painters, particularly Turner and Constable, have been the subjects of many monographs, especially of a biographical nature. But there has been very little scholarly writing aiming at a general view of the historical problems in nineteenth century British painting, and even less in sculpture.

Furthermore, although nineteenth century British art is now regarded with greater tolerance than it was a decade or two ago, most of the material is still distinctly unfashionable. Those writers who do deal with it frequently present the topic with lightly veiled condescension. One is happy to say at once that Mr. Boase avoids this pitfall. He approaches his subject with respect, tempered by a sound scale of values and good humor.

Mr. Boase includes a formidable amount of material in his survey. Not only does he discuss English painting, architecture, sculpture, and decorative arts, but he also offers accounts of such related matters as the history of taste and patronage. The number of subsidiary subjects he touches is astonishing, and we must admire the virtuosity and skill with which he is able to mold them into a single volume. Chromo-lithography, photography, the materials of water color, furniture design, the history of collecting, Gothic restoration, controversies at the National Gallery on picture cleaning, book designs—all this and much more flows easily into the narrative. Every student of the period will welcome a book in which so much useful information is gathered in one place, and marshaled into meaningful and readable order.

The organization adopted is topical within a general chronological framework. Numerous cross-references weave the book together and prevent it from becoming a series of short essays on the various arts and the artists who practiced them. The reader does, nevertheless, obtain reasonably coherent accounts of the careers of the artists and the major artistic projects.

It should not be expected in a survey text of this type that the author is able to make substantial additions to our detailed knowledge of his subject. What Mr. Boase has to say about the painting and architecture of the period is primarily a well-informed digest of current scholarly opinion. Generally the author's sense of proportion and emphasis is eminently sane. In accordance with recent trends he gives more attention to such men as Etty and Wilkie than would have been thought necessary a few years ago. However, it is curious that minor figures such as William Payne and Samuel Prout should receive as much as or more space than Rowlandson.

The chapters and passages dealing with sculpture are particularly welcome. This is certainly the least known of the arts in Britain during the period, and data concerning it has been heretofore difficult to obtain outside of biographical dictionaries. Equally useful in bringing together out-of-the-way information are the pages (concentrated mostly in the latter part of the book) dealing with state patronage in such large schemes as the Houses of Parliament, the Great Exhibition, and various memorial projects.

The numerous bibliographical references are an excellent feature of the book, particularly appropriate in a survey of this type. Indeed these references, together with the list of books at the end of the volume, constitute a good working bibliography (just about the only one in print) for British art during the first three quarters of the nineteenth century. The nearly two hundred illustrations (on ninety-six plates) are well chosen to illustrate the text. They are frequently arranged in an imaginative and stimulating way, posing interesting visual problems for the reader that are not specifically discussed in the text. Lawrence and Harlow appear side by side treating comparable subjects, as do Lawrence and Alfred Stevens on another page. Four late eighteenth, early nineteenth century paintings of castles grouped on one opening provide a provocative index to changing ideas in the treatment of that particular theme.

Within the approach Mr. Boase has established for himself his book is admirable. It is closely packed with reliable information, yet written with urbanity, wit, and a fine sense for the revealing anecdote. Nevertheless, while emphasizing these substantial virtues, it may

also be useful to define a little more clearly the author's method and some of the limitations within which he has chosen to work.

Mr. Boase prefers to write about personalities and events rather than art and ideas. There would, indeed, be some students, at least in America and on the Continent, who would hesitate to classify the book as art history. Mr. Boase tends to write around the topic, chronicling information about people, happenings, and circumstances connected with the arts, but he has comparatively little to say about the art itself. He does make frequent perceptive remarks about individual works of art, but these usually take the form of well-turned descriptive phrases sprinkled through the biographical framework. He clearly eschews the type of stylistic analysis that frequently forms the core of art historical studies. There is little sustained examination of artistic developments or controlling ideas and intentions operating through the period with which he deals. In spite of the use of many conceptual terms even as chapter headings ("Romanticism," "The Regency Style," "The Age of Wilkie") he has little to say about concepts, and seems deliberately to avoid generalizations. The Romantic Movement, surely the key problem for the whole of the book, is playfully dismissed on the first page as "an elusive concept" (which it certainly is) and the author makes no further serious attempt at definition.

It must be admitted that had Mr. Boase chosen to organize his book primarily around stylistic and ideological developments rather than around personalities and events, serious difficulties would have immediately arisen. Certainly he would not have been able to include anything like the number of artists he does, and much of the fascinating secondary material would have had to be eliminated. Furthermore, the terminal dates taken for the volume would be very much less satisfactory than they are now. Ideologically and stylistically the major breaks in British art of this period (insofar as breaks exist at all) are in the mid-eighteenth and mid-nineteenth century. The developments, particularly in architecture and landscape, are continuous from the 1740's to the early nineteenth century. The full tide of English romantic art in the first quarter of the nineteenth century can no more be understood without the eighteenth century background than can the great age of English romantic literature. This circumstance is, I am sure, well known to Mr. Boase, for in those moments when he permits himself to hint at trends and developments he quite properly refers the reader back to the late eighteenth century; and he does in fact include many artists who belong as much to the eighteenth as to the nineteenth century. Of course we do not yet have the volume in the *Oxford History of English Art* that will be devoted to the eighteenth century, and more will doubtless be said there concerning the bridge between the two centuries. The forward terminus of the discussion is less problematic, although here too I suspect Mr. Boase is well aware that the shift toward more distinctly ethical values in, say, the theorizing and architecture of Pugin and the painting of the Pre-Raphaelites marks a new phase in English art during the last quarter century with which he deals.

One doubly regrets the author's reticence where general ideological and stylistic developments are concerned because he is well qualified to speak on such matters. The sort of information concerning artists and events with which his book is so closely packed is an essential part of the foundation on which art historical judgments and conclusions should be built. Unfortunately much art historical writing proceeds without this foundation. Surely there are not many scholars who possess Mr. Boase's familiarity with the dense forest of nineteenth century British art. One wishes only (ungrateful as it must sound) that he had concentrated a little less on the trees and shown us more of the woods. But in spite of this limitation in approach, the book is a substantial and very useful compendium of information concerning a complex period, and will remain a standard reference for many years to come.

ROBERT R. WARK
Henry E. Huntington Library and Art Gallery

OWEN E. HOLLOWAY, *Graphic Art of Japan; the Classical School*, Hollywood-by-the-Sea, Fla., Transatlantic Arts, 1957. Pp. 140; 126 figs. $7.75.

Much has been written about the graphic art of Japan in the past, but it has most always been concerned with the form of expression known as the *ukiyoe*, the so-called "pictures of the floating world," which in truth are but pictures of the world in which the artists lived. Most often the other varieties of graphic expression have been ignored. It is thus a great pleasure to find a person with the devotion and knowledge of the author of *Graphic Art of Japan* who faces this serious hiatus in our knowledge of Japanese art and not only diagnoses the situation but also takes action to remedy it. Mr. Holloway's book is not about graphic art in general but it is about a major segment, which he has chosen to call the Classical school. The need for this book and the very good material contained within it far outweigh some deficiencies in its make-up.

The Classical school of the author is the art of woodblock prints and book illustrations that were produced in and about the urban centers of Kyoto and Osaka, in contrast to those produced in the turbulent city of Edo, during the eighteenth and nineteenth centuries. More important than the location is the fact that they are not *ukiyoe*. Both of the former cities were not immune to the spell of *ukiyoe* but they were also centers for the production of a form of graphic art derived from a neo-Chinese style known as the Nanga, literally Southern picture, or Bunjin-ga, literati picture. Thus, two rather distinct schools of graphic art, *ukiyoe* and Classical, co-existed in late Tokugawa Japan.

It is with his definition of Classical that I feel the author first goes astray. He tends to impart a moral value to the term Classical, as being synonymous with that which is good in contrast to the *ukiyoe*, which, it is quite obvious, he feels represents the opposite. One could argue at length the use of the word classical. Certainly to the purist the *yamatoe* style found in the narrative handscrolls is classical, for it is considered to be a native development. The Nanga and Bunjin-ga, in contrast, are strongly derivative of the influence of Chinese art and that of the individualists. The *ukiyoe* can almost be considered to be the *yamatoe* of the Edo period, and since they are more representative of the traditions of Japan perhaps they are more worthy of the term classical. The Classical school of the author stems from earlier developments such as the Muromachi-suiboku, the ink style painting which came into being in the later portion of the fourteenth century. They are post-*yamatoe* and are not in a true sense classical. It is mainly to the Sinophile that they are considered so. This is not an issue to be argued here, for in a like manner I can envision the hue and cry of nationalism entering into art history. We must refrain from any such indulgence and I only insert the issue because of the moral connotation imparted by the author to the two terms.

The book is subdivided into thirteen sections besides a preface, footnotes, list of chief albums of the Classical school, and notes on the plates. The contents include a discussion of the social structure of Japanese taste, Chinese culture in Japan, what is graphic art, medium and method, visual and verbal art, and the subject matter of the graphic art of the Classical school. In considering all of these matters the author presents his theories in a concise manner. This raises a second objection to the book. Although we are introduced to a school, we are not given a historical foundation upon which to build. It springs forth fully developed and we learn nothing of the currents that made it great. We are told very little of the changes within it. The names of many artists are placed before us, and for the layman they are new names. No attempt is made by the author to tell us of these men. We are told only that they were artists, and that is meant to satisfy the reader. Suiseki, Bumpō, Kanyōsai, Soken, Chikudō, Taigadō, Bōsai, Koshū, Kōchō, Gesshō, Baitei, Kihō, Buson, Nantei, Chinnen, and other names are presented to us but no biographical data is given. As presented they lack personality and character. How unfortunate it is that the author did not elect to tell us more about these men! They were all quite individualistic and many biographical facts are available. Had these been presented it would have made for a much richer and warmer story. As it stands, it is but a framework.

A feature that is especially disturbing in a scholarly book is the total lack of an index. The layout of the book is also very confusing. The blame for this may well rest on the publisher rather than the author, but it does not lessen the confusion. One must continuously flip back and forth from text to plate to footnote to comments on the plates; and it becomes exasperating. The best solution is to approach the book with a stack of bookmarks and commence the leaps forward and the retreats. The author and publisher are to be commended, however, for the large number of good illustrations that accompany the text. There are some 121 figures in black and white as well as five very handsomely produced color plates. An examination of these alone is sufficient to whet the reader's appetite for more.

I feel that I have been harsh in treating Mr. Holloway. I do not mean to be so. He has been bold and taken a step forward. He writes well and has a good grasp of a fascinating subject. The graphic art he writes of is without question aesthetically beautiful and great. The artists who produced the works discussed were capable of imparting every emotion into their art. Solace, humor, love, longing, labor, nature, and simplicity all exist in great harmony in the world created by them. The author has opened the door to a school of Japanese graphic art long unstudied and for this alone he deserves a laurel wreath. I hope that he will not stop here but will continue to develop his story. He has signalled the dawn and we of the Western world should be proud to ask him to lead us into daylight.

HAROLD P. STERN
Freer Gallery of Art

LIST OF BOOKS RECEIVED

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Baroda Museum and Picture Gallery, *Sculptures from Samalaji and Roda*, ed. by V. L. Devkar, Baroda, 1960. Pp. 136; many figs. Rupees 15. (Bulletin of the Museum, XIII)

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BOËTHIUS, AXEL, *The Golden House of Nero; Some Aspects of Roman Architecture*, Ann Arbor, University of Michigan Press, 1960. Pp. 195; 109 figs. $15.00. (Jerome Lectures, 5th series)

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Cincinnati Art Museum, *Walt Kuhn, 1877-1949; a Memorial Exhibition*, Cincinnati, 1960. Pp. unnumbered; 42 figs.; 12 color pls.

CIRLOT, JUAN EDUARDO, *Tapies*, Barcelona, Ediciones Omega, 1960. Pp. 99; 63 pls.; 4 color pls.

CLARK, KENNETH, *Looking at Pictures*, New York, Holt, Rinehart and Winston, 1960. Pp. 199; 75 pls.; 6 color pls. $10.00.

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DOBAL, CARLOS, *Iconos; imágenes sagradas griegas y rusas*, Havana, Damas Isabelinas de Cuba, 1958. Pp. 20; 5 figs.

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Este, *Mostra dell'antica ceramica di Este, 11 settembre-4 novembre 1960*, ed. by Gina Barioli, Città di Este, 1960. Pp. 90; 101 figs.

FRANKL, PAUL, *Die Glasmalereien der Wilhelmerkirche in Strassburg*, Baden-Baden, Librairie Heitz, 1960. Pp. 85; 18 pls. DM 24.00.

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GIBBS-SMITH, CHARLES H., *The Fashionable Lady in the 19th Century*, London, Victoria and Albert Museum, 1960. Pp. 184; 219 figs. £0. 25 s.

GIOSEFFI, DECIO, *Canaletto; il quaderno delle gallerie veneziane e l'impiego della camera ottica*, Trieste, Università degli studi, 1959. Pp. 84; 50 figs.

GUDLAUGGSON, S. J., *Katalog der Gemälde Gerard ter Borchs, sowie biographisches Material*, The Hague, Martinus Nijhoff, 1960. Pp. 318; 30 pls. $12.00. (Vol. II; vol. I published 1959)

GUGGENHEIMER, RICHARD, *Creative Vision for Art and for Life*, New York, Harper & Brothers, 1960. Pp. 175. $3.50. (Revised edition)

HAMILTON, GEORGE HEARD, *Claude Monet's Paintings of Rouen Cathedral*, New York, Oxford University Press, 1960. Pp. 28; 9 figs.; 1 pl. $0.75.

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PIGNATTI, TERISIO (ed.), *Il Museo Correr di Venezia; dipinti del XVII e XVIII secolo*, Venice, Fondazione Giorgio Cini, 1960. Pp. 441; many figs. (Cataloghi di raccolte d'arte, 6)

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SCHODER, RAYMOND V., *Masterpieces of Greek Art*, Greenwich, Conn., New York Graphic Society, 1960. Pp. 15+; 112 color pls. $12.50.

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SPAETH, ELOISE, *American Art Museums and Galleries; an Introduction to Looking*, New York, Harper & Brothers, 1960. Pp. 282; many figs. $5.95.

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Utrecht, Centraal Museum, *Paus Adrianus VI, 1459-1959*, Utrecht, 1959. Pp. 285; 77 figs. (Exhibition catalogue)

Warsaw, National Museum, *Drzeworyt Japoński XVII-XX w.*, Warsaw, 1960. Pp. 60; 24 pls. (Exhibition catalogue)

———, ———, *Malarstwo Niderlandzkie w Zbiorach Polskich 1450-1550*, ed. by Jan Białostocki, Warsaw, 1960. Pp. 125; 96 pls. Zlotys 20.00. (Exhibition catalogue)

Washington, Smithsonian Institution, *Italian Drawings; Masterpieces of Five Centuries*, Washington, 1960. Pp. 120; 43 pls. $1.75. (Exhibition catalogue)

WELLESZ, EMMY, *The Vienna Genesis*, New York, Thomas Yoseloff, 1960. Pp. 39; 8 color pls. $4.95.

WETTSTEIN, JANINE, *Sant'Angelo in Formis et la peinture médiévale en Campanie*, Geneva, Librairie E. Droz, 1960. Pp. 175; 28 pls. (Thesis)

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WILDENSTEIN, GEORGES, *The Paintings of Fragonard*, New York, Doubleday & Co. (Phaidon), 1960. Pp. 339; 334 figs.; 16 color pls. $25.00.

WIT, J. DE, *Die Miniaturen des Vergilius Vaticanus*, Amsterdam, Swets & Zeitlinger, 1959. Pp. 216; 40 loose pls. $21.00.

YCIAR, JUAN DE, *Arte subtilissima; a Facsimile of the 1550 Edition*, New York, Oxford University Press, 1960. Pp. unnumbered; many figs. $5.00.

ZÁDOR, ANNA, *Pollack Mihály, 1773-1855*, Budapest, Hungarian Academy of Sciences, 1960. Pp. 514; 286 figs. Ft. 120.00.

LETTERS TO THE EDITOR

Sir:

The review you published of my book *Symbol and Image in William Blake* (THE ART BULLETIN, XLII, 1960, p. 79), has just come to my notice. Whilst not wanting in any way to question your reviewer's judgment or scholarship, I must protest that he castigates my book almost wholly for what it is not and was never intended to be. I am called to task for not tracing Blake's sources and expounding the possible derivations of his ideas, images and symbols; for not pointing out such an obvious (but to my text irrelevant) fact that Blake studied Jacob Boehme's writings.

Now it is true that Blake was far from being an ignorant man; he was well-read in the religious, mythological and "mystical" literature which was available to him. But Blake was not a scholar, and his interests were not scholastic. He was first and foremost a visionary, a "poetic sage" (his own phrase), a man of intense inner experience, supremely intent, not on knowledge, but on "inspiration," and on the understanding and elucidation of his own experiences. For him, as with all prophets, sages and saints, the goal was realization. Of this there can surely be no question!

Your reviewer quotes and takes strong exception to my affirmation: "His art is entirely devoted to psychological and spiritual ends and it constitutes a vast treasure-house of potential life waiting to reveal itself to any one who cares to look. For this, no initial study or learning is needed, but the spark of intuitive imagination must be there." But this is entirely in keeping with Blake's point of view. He wrote, "Jesus supposes every Thought to be Evident to the Child and the Poor and Unlearned. Such is the Gospel." (Annotations to Berkeley's *Siris*.) Moreover in his well-known letter to the worldly-wise Dr. Trusler he affirmed of his own visions, "and Particularly they have been Elucidated by Children, who have taken a greater delight in contemplating my Pictures than I ever hoped."

Why then does your reviewer set such store on hypothetical sources and derivations? *Must* a book on Blake show whence every idea, image, symbol *may* have been derived?—or *ipso facto* supply a list of parallels and comparisons? On the contrary, I do not believe that what is vital and illuminating in Blake was derived from written sources at all. Blake was a visionary, not merely in the sense that he had an extraordinary imaginative talent, but in that he was a prophet and sage who attained to a clearer, truer understanding of life than the commonalty: to a fuller share in that consciousness which is man's heritage. The task I set myself (*pace* your reviewer) was to attempt to penetrate some of Blake's deeper realizations, to study his message to us, and to elucidate this in terms of contemporary thought, which is aware of Jungian psychology and several modes of Eastern religious thought (which for some reason seem merely ridiculous to your reviewer). Whilst it is easy to repeat phrases of Blake's such as "The Nature of my Work is Visionary and Imaginative," it is equally certain that such phrases remain meaningless to those who have no direct experience of visions and nondiscursive forms of awareness. The task of understanding the work of vision and imagination (in Blake's sense) is a real and practical one and should not be belittled in favor of book-learning and scholarship, which is quite contrary to the spirit of Blake.

GEORGE WINGFIELD DIGBY
Victoria and Albert Museum

Sir:

I am naturally reluctant to engage in a debate in the columns of your journal, the more so as I feel that my exceptions to Mr. Digby's book as set forth in my review published in your March issue are clearly expressed there and are valid.

My objections to this work are basically three in number, all of which I endeavored to develop in the review. I shall recapitulate them here.

(1) It seems to me that the book is badly organized. Chapter 3, in an amended form, should have come first. To quote my review: "A concise, clear, and valid introductory chapter is, in point of fact, precisely what this book needs and what it lacks." Granted that the task Mr. Digby set himself "was to attempt to penetrate some of Blake's deeper realizations," and not to study his sources, I still consider that he went at his task backwards.

(2) Another objection may be summed up in the phrase of Mr. Digby's letter which states that he "does not believe that what is vital and illuminating in Blake was derived from written sources at all." This makes it all sound too easy. Blake says, "What are the Gifts of the Gospel, are they not all Mental Gifts? . . . To Labour in Knowledge is to Build up Jerusalem." To read Mr. Digby's account, one gets too much the impression that the Gospel is *The Gospel of Ramakrishna*. It is not because of "Jungian psychology and modes of Eastern religious thought," that I take exception to Mr. Digby's work (and far from seeming "merely ridiculous" to me, I am much indebted to those who have explored these among other aspects of Blake's ideas which have anticipated more recent trends of thought—S. Foster Damon, Northrop Frye, Piloo Nanavutty, Milton O. Percival, W. P. Witcutt among others). Rather, as my review explicitly stated, it is because the author "fixes upon these sources to the neglect of most others." This I maintain gives a distorted picture of Blake, his art, his writings, and his ideas. This is not Blake as he is, but Blake as seen through the author's predilections. The result is to ignore or do violence to much that is basic to an "Understanding of Blake's Art." Surely it is the task of the reviewer to call this to the attention of the reader.

The specific instance which I give of this tendency to neglect sources is, I maintain, significant. I do not find fault with Mr. Digby for not having precisely pinpointed the source or sources of the Arlington Court watercolor. However, I must insist that by failing to call attention to the virtual certainty of the existence of a literary source for this drawing, Mr. Digby misleads the general reader as to Blake's *method* which, particularly at this stage of his career, was to "start with a major literary source—nearly always traditional and familiar—and to elaborate a visual commentary upon it in terms of his own beliefs and symbolism."

(3) The final point I would raise concerns that attitude of the book which Mr. Digby defends in his letter by a quotation from Blake. I refer to that from the annotations to Berkeley's *Siris*, "Jesus supposed every Thought to be Evident to the Child and to the Poor and Unlearned." [Blake actually wrote "every Thing," but that is a small matter; Blake did himself misquote Shakespeare and even the Bible on occasion, although insisting that "it is in Particulars that Wisdom consists."] However, such a statement as this must be read in the same sense as the saying of Christ: "Whosoever shall not receive the kingdom of God as a little child, he shall not enter therein." Blake believed that the imaginative faculty was fundamental to art, but that it exercised itself at the highest when acting in harmonious concert with reason and feeling. To interpret such a saying of his to signify that Blake is best approached in the manner in which Parsifal sought his vision of the Grail—as *der reine Tor*—is once more to give an utterly false impression of Blake. One should add to Mr. Digby's quotation the reminder that the activity of the inhabitants of Paradise is to engage in "Conversations concerning Mental Delights," for the reason that "Mental Things are alone Real." (*Vision of the Last Judgment*)

Mr. Digby at the outset of his letter pays me the compliment of not questioning my "judgment or scholarship." In view of what I have further set out above, I must, therefore, repeat my former judgment that "the general reader, to whom the book is after all addressed, should be advised to turn elsewhere."

ALBERT S. ROE
Henry Francis duPont Winterthur Museum

Sir:

In replying to Professor Crosby's review of my *The Gothic Cathedral* (THE ART BULLETIN, XLII, 1960, p. 149) I ought to say at once that I do not wish to quarrel with his conclusion. If he finds my interpretation but a "speculative" effort,—what historical work is free of this flaw? But in the interest of our discipline no one could have wished more than I that he would have stated the reasons for his conclusion. The purpose of a learned review, moreover, is not only to state the reviewer's conclusions but to acquaint the reader with the content and argument of the book under discussion. Crosby's review contains so large a number of statements wrongly attributed to me and strays so far from the argument of my book that I am compelled to correct at least the more serious inaccuracies.

There is, to begin with, a number of "quotations" that occur nowhere in my text. "In the writings of Alan of Lille and of Alexander of Hales," Crosby writes, "von Simson says there is ample evidence that the 'musical proportions' were considered the most perfect by mediaeval architects." I have written no such thing. On pp. 31f. of the book the reader will find precise quotations from the two writers mentioned as well as the meaning of what they have actually said. Again, I am supposed to have written "artistic expressionism," whereas my text reads "artistic expression" (p. 58). Elsewhere Crosby writes: "Light is the form that all things have in common. 'Can we marvel that this world view resulted in Gothic?' " The second sentence, of course, is supposed to be a quotation from me. This is what I have written: "In the aesthetics of the twelfth and thirteenth centuries . . . light is conceived as the form that all things have in common, the simple that imparts unity to all." Then two paragraphs later: "The distinction between physical nature and theological significance was bridged by the notion of corporeal light as an 'analogy' to the divine light. Can we marvel that this world view called for a style of sacred architecture in which the meaning of light was acknowledged as magnificently as it was in Gothic?" (pp. 54f.)

Regarding my discussion of Sens Cathedral, Crosby writes: "On the assumption that its plan may even antedate Suger's St.-Denis von Simson analyzes its 'tectonic skeleton structure as an innovation promoting visual unity.' " The relevant passage of my analysis of Sens, does not depend on any "assumption" and reads as follows: "The system of Sens shows the clear distinction between the tectonic 'skeleton,' ribs and responds, and the wall segments between them." Several passages later I point out that the oblique arrangement of the bases of the shafts supporting the diagonal vault ribs "induces the eye to see the entire edifice, vaults and supports, as a unit." With reference to my statement that Chartres Cathedral is an edifice without architectural ornament, Crosby remarks: "This, von Simson maintains, is proven by comparisons with the Cathedral of Laon, the choir of Saint-Remi of Reims, or the south transept of the Cathedral of Soissons." In this case the reviewer's error may be due to his confusing the terms "ornament" and "design." Herewith my text regarding the three edifices last mentioned (p. 216): "The design of these works is much more varied and rich. Their style is at once fiery and delicate, dramatic and graceful, attributes that we would not apply to Chartres."

The inaccuracies mentioned so far (and others to which I shall turn later) occur in what Crosby calls the "lengthy summary" of my book that takes up the first part of his review. The astonishing freedom with which he handles the quotation mark may in part be accounted for by his attempt to condense a long and complex argument. Almost without exception, however, his distorted quotations prepare the way for Pro-

fessor Crosby's subsequent criticism which, it seems to me, would lose most of its plausibility if applied to what I have actually written.

Thus he begins the critical part of his review by exhorting the reader to learn "how to control many of the generalizations and positive assertions that appear frequently. The fourth sentence of the Preface, for instance, is such an assertion: 'Medieval writers derive the norms of beauty and the laws that ought to govern artistic creation from the immutable values of a transcendental order.' Since the previous sentence speaks of the vision and the technique of the mediaeval artist, the inference seems to be that such 'norms' and 'laws' governed creative activity in architecture, sculpture, and painting. Unless I have been quite careless, or grossly superficial in my own readings, this is not the case, although the statement can be substantiated in philosophical treatises, which very seldom refer to actual buildings." I have no reason to believe that Professor Crosby has been careless or grossly superficial in his own readings, but he has been more than a little superficial in reading my text. In the sentence following the one he quotes I continue: "are such statements pious commonplaces, mere theory that remained remote from the practice of the workshop . . . or have the hands of those who created the masterpieces of medieval art actually been guided by theological vision?" No "inference," "generalization," or "positive assertion" here. The authors referred to are obviously the authors of theological treatises, and I merely formulate, in this prefatory sentence, the question which my book is to explore, while in the very next sentence I call attention to the methodological difficulties inherent in such an undertaking.

"In some instance," Crosby continues, "these assertions are qualified by a reference in a footnote, but only an assiduous reader is likely to find them." The one example Crosby mentions is my remark regarding the use by Cistercian architects of such elements as the pointed arch and the flying buttress before their appearance in Gothic architecture, "qualified" by my reference to the fact that both occur already in Cluny III. I do not know what "assertion" Professor Crosby thinks this note is to qualify, for without much assiduity he will find in the text of the following page the clear statement that a) "the Cistercians did not invent new architectural forms" and b) that their architecture seems to be influenced by the early architecture of Cluny.

Crosby rightly points out that I attribute (as others have done before me) to Cistercian architecture great influence upon the origin of Gothic. It is not clear to me what his own opinion is. But I must insist on being quoted accurately. Crosby asserts that this influence "recurs insistently" in my analysis of Suger's St.-Denis as well as "in the building of Chartres." I challenge Professor Crosby to back up this statement with a single quotation from my text. What I have in fact written is: "It would be incorrect to describe the first Gothic as the child of Cistercian architecture even though it is the child of St. Bernard. . . . The Abbot of Clairvaux had pointed out himself that his postulates applied to monastic architecture only. To the secular cathedrals and their art, which was aimed at the edification of people living in the world and had to appeal to their imagination, he made important concessions. . . ." (pp. 57f.) And it is precisely in my discussion of Suger and St.-Denis that the importance of this distinction between Cistercian and Gothic is clearly and concretely stated with reference to St.-Denis. (pp. 112ff. and 123) Instead of misquoting me Crosby ought to have taken issue with this passage.

As to "Cistercian" influence at Chartres, Crosby fails to produce any evidence for his assertion, but he creates the impression that I identify "Cistercian" and "Augustinian,"—despite the fact that I have in an earlier chapter discussed at length in what sense and to what extent Augustinian aesthetics influence mediaeval thought in general. Crosby writes: "At Chartres von Simson announces that we shall find 'the realization of the Augustinian aesthetics of measure and number.' But when the discussion of the proportions of Chartres is reached we find ourselves immersed in the complications of the . . . *sectio aurea*, which produced imperfect rather than perfect consonances." Crosby curiously fails to mention that in discussing the proportions of Chartres I mention not only the *sectio aurea* and its musical equivalents (s.b.) but also the presence of the very "Augustinian" square and cube, and thus have by no means failed to prove what I have previously announced.

Crosby's review is as remarkable in "quoting" what I have not said as in omitting what I have said. "Where other than at Sens," he exclaims, "does he discover these proportions in Gothic buildings?" He does not mention my reference to the southern transept of Lausanne and to the façades of Paris, Strassburg, and York; nor does he take issue with my suggestion that the proportion "according to true measure," the presence and importance of which in Gothic architecture he will hardly contest, may also be connected with the preference for the "perfect" ratios. To disprove my thesis regarding Gothic architecture Crosby quotes a statement by Charles Seymour on Noyon Cathedral, but fails to discuss my analysis, of some importance, I should think, within this context, of Noyon as a building of the transitional style in which certain pre-Gothic features disappear only in those three western bays that were completed last (and in which, according to Seymour, the relation of the width of an aisle to that of the nave is brought to the "perfect" ratio of 1:2).

Professor Crosby's remarks on my discussion of the relationship between architecture and music open with two questionable statements of his own: "Geometry, of course, was the handmaiden of music" and "music was synonymous with the liturgy." He wonders why I did not investigate the particular qualities of twelfth century music. "If we are to emphasize analogies with music, is it right to ignore the characteristic music of the period?" Indeed, within the context of my argument one such analogy is indispensable, i.e. the role of those consonances, octave, fifth, and fourth, that

correspond to St. Augustine's "perfect" ratios in mediaeval music. I wonder how Crosby, puzzled by my "omission," could have overlooked a sentence like the following: "The impact of metaphysics and theology upon the actual practice and theory of music is evident throughout the twelfth and thirteenth centuries and accounts for the dominant role assigned to the three Pythagorean consonances" (p. 191); or the abundant references I give for "the decisive role of the three perfect consonances in medieval music to the end of the thirteenth century." As to Crosby's remark concerning the *sectio aurea* at Chartres, I would remind him of my statement (p. 211) that the musical equivalents of this proportion, the third and the sixth, "were since the twelfth century allowed by medieval musicians in order to relieve the monotony of the perfect consonances." In this connection Crosby finds it necessary to add a word of criticism or warning to a musical metaphor I have used in comparing the proportions of St. Michael's, Hildesheim, and Chartres. According to Crosby I "suggest" that the proportions of St. Michael "are" polyphonic and those of Chartres symphonic. Actually, my sentence reads: "We might say that proportion is *perceived* as 'polyphonic' at St.-Michael's and as 'symphonic' at Chartres." Crosby adds: "Obviously he is not speaking in mediaeval terms here, for if polyphonic might be applicable, symphonic is not." Musicologically, of course, neither term is applicable nor can I imagine that many readers will take the obvious metaphor musicologically seriously. Amusingly, however, it is precisely in mediaeval terms that "symphonic" is valid. In my own book a particularly appropriate reference for this can be found (p. 211, n. 78), where the thirteenth century mathematician Campanus of Novara praises the "irrationalis quaedam symphonia"—of the *sectio aurea*.

Another disturbing feature of this review is Crosby's tendency to ignore decisive parts of my argument, or to present what I have said as a divergent opinion of his own. Thus he asserts that I have not explained why the first Gothic appeared exclusively in the Ile-de-France—the main argument of the entire book!—instead of telling the reader what my argument is or taking a critical position in regard to it himself. Again, he comments on my definition of "geometric functionalism" adding "It is my opinion, though, that (geometry) served as a tool, as a means to an end, to the same degree that it existed as a basis of aesthetic reasoning." This view in fact is expounded at length in my book (pp. 20-33), and the sentence that sums up my argument seems as clear to me as Mr. Crosby's: "Rigid geometrical means became a technical necessity as well as an aesthetic postulate if the building was to be stable as well as beautiful."

Particularly confusing is Crosby's criticism of my attempt to place the first Gothic within the context of the general stylistic trend of the first half of the twelfth century. He claims that I have presented the art of Lorraine as the earliest manifestation of the Gothic style; he rebukes me for not having demonstrated how Byzantine influence upon the first Gothic manifested itself and for not having seen fit to elaborate or substantiate my observations regarding the new sense for tectonic values, the calmer and firmer mode of composition that by 1130 or so had rendered obsolete the ecstatic restlessness of line or the ardent expressionism of the preceding period. In point of fact I have of course nowhere claimed that the first Gothic occurred in Lorraine. What I have said (p. 46) is that the "earliest manifestations" of what Boeckler has called the *Stilwende* at the turn from the eleventh to the twelfth century (a generation before the first Gothic!) "seem to have occurred" there.

As to the "demonstration" of Byzantine influence upon the first Gothic sculpture I can only refer the reader to plates 22B and 23 as well as to my remarks on pp. 151f. and n. 36 where, besides giving examples from Byzantine art, I also quote Koehler's remarks on the "contribution of Byzantine art to the formation of the new style which manifests itself on the great west portals of St.-Denis and Chartres." And regarding my failure to "substantiate my observations by more adequate evidence" of the broad stylistic trend of the early twelfth century, I must assume that Crosby has, once again, overlooked the numerous examples from the representational arts that I have adduced, especially p. 45 and n. 62. These examples, however, like the manuscripts of the "Channel" style, I mention not, as Crosby asserts, as "early experiments leading to the *statue colonne*," but as "inviting comparison," as stylistic trends running parallel with, the statue column. The same is true for the development of Lombard sculpture in the first half of the twelfth century which, unlike Crosby, I cannot regard as a possible prototype, but as an Italian parallel to early Gothic sculpture (Cf. p. 45, n. 62). As to Crosby's assertion that I am guilty of "equating" Byzantine and Romanesque architecture because I have mentioned one aspect in which both contrast with Gothic, I can only remind him that elementary logic would have saved him from the erroneous notion that two things are equal because they have one element in common.

Regarding Crosby's critique of my remarks on Suger and St.-Denis, one example ("Cistercian influence") has already been given. Another is his interpretation of my chapters concerning Suger's share in the building of the abbey. Crosby does not think that "it is necessary to insist on Suger's artistic abilities" and proceeds to give his own psychological interpretation of Suger's "peasant" mind. He is certainly entitled to such personal opinions (his suggestion that Suger's *De Consecratione* may be "reflective" of Abelard's *Sic et Non* is another striking example), but in all fairness he ought not to have given the impression that I have presented Suger as the architect of St.-Denis. To quote only two passages from my text: "We can hardly assume that a man in Suger's position could have had either the time or the technical knowledge to carry out a building that, from the artistic as well as the constructive viewpoint marked a revolution." (p. 96) "Certainly he did not 'invent' the forms of the new style as illustrations of his ideas." (p. 135)

Again, Crosby writes "von Simson states with assurance that 'we know the archetype that Suger's church was designed to resemble,' i.e. the 'Solomonic temple.' " Actually, the quotation is the beginning of a sentence reading "Only now that we know the archetype," etc. and summing up my exposition of how this term is to be understood. Here, as so often, the "quotation" is tailored in such a way that my argument must appear insipid to the reader. This is what I have said (pp. 95f.). "Aside from (Hagia Sophia) Suger admits to only one other source of inspiration: the Solomonic Temple. . . . We have seen in the preceding chapter how cosmological as well as mystical speculations prompted many a medieval builder to consider Solomon's Temple a kind of ideal prototype for his own work. But Suger had not seen either of these two lofty 'models.' Whether or not he had any clear notion of their design, the down-to-earth problems of construction were not answered by any available description of the two buildings." Then, after discussing Norman and Burgundian influences upon the design of St.-Denis, I continue "The vision that Suger related at the beginning of his treatise, his comparison of his church with the Temple of Solomon, of his choir with the Heavenly City of the divine king, are never mere allegories but, on the contrary, recall the archetype that Suger, as builder, sought to approximate . . . he did perceive what we may call the symbolic possibilities lying dormant in the architecture of Burgundy and above all Normandy." (pp. 134ff.) A critique of this argument would have been more helpful than a distorted quotation.

Hardly less misleading are the paragraphs that Crosby devotes to my remarks about the architect of Chartres Cathedral. Once again, this reply is not the place to argue the merits of Crosby's personal opinions, such as his view of the Gothic architect as a mason guided by "rules of thumb" or his view of the nature of artistic genius; where these views lead him to caricature my own argument, however, I must insist on what I have actually written. Crosby asserts that I have denied the Master of Chartres "the insight and genius which enabled him to build for every succeeding generation." As proof of this contention he writes that the Master of Chartres, according to me "was responsible to the canons who later were called *canonici provisores* or *magistri fabricae ecclesiae*. These canons represented the ecclesiastical body which by the end of the twelfth century at Chartres was 'unlikely to be susceptible to novelty and invention.' " In point of fact I describe (p. 221) the canons mentioned as responsible for the *financial administration* of the Cathedral fabric. The retrospective (not "reactionary," as Crosby would have it) intellectual climate of the Cathedral school at the turn of the century is mentioned elsewhere (p. 219) with reference to the work of the Chancellor, Peter of Roissy. The tastes and wishes of men of this type, I continue, the Master of the new cathedral had to take into account. "None of them was able to stifle the extraordinary forcefulness of his genius." Elsewhere I speak of Notre-Dame of Chartres as "an artistic unit of unexcelled homogeneity and indeed the expression of (the master's) unique genius." My entire last chapter is an exposition of this view.

Sweeping generalizations are another remarkable feature of Crosby's review. Because I have "seemingly endorsed" (in a footnote) an article by Funck-Hellet, Crosby questions my "critical evaluation of other theories regarding the 'technical methods' of mediaeval masons." Because I reproduce two "obsolete" (Crosby's quotation marks) plans, "suspicions" are raised in his mind about my real concern with the true character of the buildings. The first of these plans is Gall's diagrammatic drawing of the choir of St.-Denis which, Crosby thinks, must have misled me into thinking that the supports "lie in axes radiating from the center of the choir." It is quite true, that in the strict geometrical sense they do not; but Gall's plan does not represent them as such any more than does Crosby's plan (*L'Abbaye royale de Saint-Denis*, pp. 68f.)—which readers will do well to compare with Gall's in this respect. My statement, however, occurs in a comparison between the choirs of St.-Denis and St.-Martin-des-Champs and would make more sense, had Crosby quoted the entire sentence instead of merely the first half. "The light from the chapel windows," I continue, "thus penetrates unobstructed into the choir." The next sentence points out that by contrast the irregularity with which the supports are placed in St.-Martin along with their greater volume account for the relative darkness of this choir. I wonder if Crosby would seriously demand mathematical accuracy in an aesthetic comparison between two works of art. His criticism of the Noyon plan is more to the point. I had indeed hesitated between reproducing it or the more accurate plan of Seymour. I decided to choose the first because I discuss the plan of Noyon only in regard to elements completed by 1205 (p. 228) whereas Seymour's plan includes also the subsequent work to 1235. Crosby, by the way, finds my use of these plans all the more "curious" since I relegate as obsolete "nearly all older works." To correct possible misunderstandings I may point out in passing that the remark occurs in a footnote (p. 14 n. 32) where I mention eight or nine studies of the subject more recent than Dehio's and it is by comparison with those (not with my book!) that I call some of the older works obsolete.

One final word about the long paragraph that Crosby devotes to my bibliography. He is strangely irked by a review of my book that appeared four years ago in the *Times Literary Supplement*, and in which an overgenerous critic had remarked that I seemed to know everything the Middle Ages had written about themselves or that anybody had written about the Middle Ages. Crosby quotes the passage at length at the beginning of his review, along with a remark of a colleague of his that my book, though he had not read it, must be good since there were so many footnotes. These two "rather awesome tributes" as Crosby calls them cowed him as much as did the book itself "which may account for the unreasonably long time it has

taken to come to grips with it." One would imagine this to be a pleasantry. But in Crosby's remarks on my bibliography, the review in the *T.L.S.* is cited again, this time as evidence that the general impression which my book produces upon the reader "is that all possible sources have been investigated and if they are not mentioned, it is because they have been found wanting." This may be "dangerously misleading," particularly for the "beginning student," and to prevent such a misunderstanding he points out two omissions from my bibliography. The first are the writings of Rupert of Deutz "which in all likelihood (were) important in shaping the iconography of St.-Denis." I am far from denying the possibility of such an influence. But my book is concerned with the origins of Gothic architecture; my few references to iconography are limited to questions directly related to that theme, and I am not aware that Rupert's writings have any bearing on it. But I hope Crosby will prove me wrong; I would consider this a truly constructive aspect of his criticism. The other omission, according to Crosby, is an article by Jean Bony which appeared in a special number of *Cahiers de Medicine de France*. It is a very brief essay for the general reader in which the eminent French scholar, so often quoted in my book, interprets a number of French cathedrals. In Bony's analysis of the Cathedrals of Bourges and Paris Crosby detects "surprising analogies" with my comparison between Noyon and Chartres. Since I cannot imagine what these analogies between an analysis and a comparison of two different pairs of buildings might be, I would be grateful if Professor Crosby would give us at least one instance of what he has in mind. I may say in the meantime that my bibliography, as its title clearly indicates, is limited to "works cited." I have not cited the particular article by Bony because it is not relevant to my argument. The same is true of innumerable other works on Gothic architecture.

I am considerably more optimistic than Crosby as regards the critical acumen of our students, including beginners. The "bias" against my book to which he confesses but which he does not explain may partly be due to his concern with teaching the student "how to control" unwarranted generalizations and positive assertions. I share this concern. But it seems hardly to justify the astonishing number of inaccuracies, false quotations, and unfounded conclusions that Crosby presents in his review and which he no more than I would pass in a student's paper.

OTTO VON SIMSON
Paris

Sir:

Thank you for sending me a copy of Otto von Simson's letter. It would seem that he and I are working on different, if not interfering, wave-lengths and that the likelihood of our understanding each other's comments are remote. Since his observations on my review, however, accuse me of an "astonishing number of inaccuracies, false quotations, and unfounded conclusions," I must reply.

First of all, let me admit to two inaccuracies and an additional one, which von Simson has failed to underscore. It is true that his text reads "artistic expression" not "artistic expressionism" as in my quotation. This is a typographical error, which occurred in my manuscript and which I failed to correct in proof. Does it completely distort the quotation? His next comment also refers to a typographical error, since my rhetorical question: "Can we marvel that this world view resulted in Gothic?" should not have been in quotation marks. I cannot admit, though, that my summary distorts what von Simson wrote.

The third inaccuracy, also a typographical error, for which I must assume complete responsibility, is not mentioned as such by von Simson. It occurs in the discussion on Sens Cathedral at the beginning of his third paragraph. In my review the pertinent sentences (p. 158b) should have been punctuated as follows: On the assumption that "its plan may even antedate Suger's St.-Denis" von Simson analyzes its "tectonic 'skeleton' " structure as an innovation promoting visual unity. "In other respects, however, Sens Cathedral was much more conservative." My understanding of von Simson's text, pp. 142-143, is that the "innovations" he discovers at Sens were "innovations" because they may even antedate Suger's St.-Denis. I have not taken issue with his analysis of a "tectonic 'skeleton' " structure.

In regard to quotations, I am accused of inventing some which occur nowhere in von Simson's text. First of all the quotation cited in von Simson's second paragraph regarding the writings of Alan of Lille and of Alexander of Hales is not in quotation marks in my review. It was not, therefore, presented as a quotation. Secondly, on page 32 of *The Gothic Cathedral* we read: "The architecture of the twelfth and thirteenth centuries offers ample evidence, as we shall see, that the 'musical proportions' employed by Alan's divine builder were indeed considered the most nearly perfect by the medieval architects also."

The next category of comments in von Simson's reply include what might be termed the reviewer's errors; and a challenge is offered which I am quite ready to accept. The first such error is mentioned in the third paragraph of his reply. It concerns the architectural ornament of Chartres Cathedral. I am accused of confusing the terms "ornament" and "design." If the reader will turn to page 216 of von Simson's book, he will find that the paragraph following von Simson's quotation begins: "The contrast between the two styles is particularly striking if we compare the capitals." Are capitals to be classified as belonging to architectural design rather than to ornament?

In the seventh paragraph of his reply, von Simson challenges me to cite a single quotation from his text regarding Cistercian influence at St.-Denis and at Chartres. In regard to St.-Denis, at the end of the first paragraph on page 93, is the following sentence: "We shall see that the latter's (St. Bernard's) ideas of religious art did not remain without influence upon

the design of Suger's church." Again, on page 113, we read: "Obviously the art of St.-Denis had to be attuned to the religious experience of which St. Bernard was the irresistible spokesman, and it had to be at least compatible with the latter's aesthetic views." On page 112, note 70 the reader will find von Simson's refutation of Louis Grodecki's thesis regarding an "artistic antagonism" between Abbot Suger and St. Bernard. In regard to Chartres, here is the last sentence of the first paragraph on page 153: "And the benign Saviour in the central tympanum, so different from the awesome judge of Romanesque sculpture, is like a monumental illustration of the 'amor vincit timorem' that epitomizes the new, more lyrical piety of St. Bernard." The reader is also referred to pages 199-200, where Cistercian ideas are recognized as a powerful influence in creating the intellectual climate for the rebuilding of Chartres at the end of the twelfth century.

Most of von Simson's other comments reflect areas of disagreement and at times of possible mutual misunderstanding. At the beginning of his eighth paragraph, he says that I have created the impression that he identifies "Cistercian" and "Augustinian." Yet, on page 50 of his book, he states: "In no other style of Christian architecture are the Augustinian 'perfect' ratios so much in evidence as in the churches of the Cistercian Order,"; and on page 55, he speaks of "the Augustinianism of Clairvaux."

In paragraph ten of the reply, there is reference to the relationship of architecture and music, but I am afraid von Simson has not understood that the "omission" I mention in my review is not in regard to his very perceptive discussion of Augustinian elements, but rather to his silence in regard to the "famous school of Nôtre-Dame in Paris, or Léonin, or Perotin" (p. 157, col. a, of my review).

Nor has he evidently understood my criticism of his use of "obsolete" plans; and unquestionably this is fundamental to the differences in our approaches to the study of these problems. My training has emphasized the necessity of a thorough knowledge of a monument, or work of art, before formulating any generalizations about it. Von Simson's book, as he stated, and as I have mentioned in my review, is concerned with the history of ideas. I have been studying Suger's church at St.-Denis for the past twenty-five years and believe at last that I am beginning to probe some of its secrets. It was not my intention to belittle von Simson's contributions to our understanding of the Gothic Cathedral. In fact, I purposefully reviewed them in considerable detail so that a reader might recognize them more easily. If I can admit to two or three typographical errors, I cannot accept von Simson's accusations of "astonishing freedom" in handling "the quotation mark," or of "sweeping generalizations," or of "unfounded conclusions." I regret that he believes I was "irked" by a previous review of his book, and I regret even more the misunderstandings which evidently have arisen because of our basically different approaches to an understanding of mediaeval architecture.

Evidence of such misunderstanding recur again and again in von Simson's reply. In paragraph 9 he says I have omitted reference to his discussion of the proportions of Lausanne, Paris, etc. I did, indeed, omit reference to them because I believed his argument was primarily concerned with Early Gothic building and not with the later accomplishments of the thirteenth century. Another instance is in his paragraph 12 in which he refers to his discussion of the art of Lorraine. On pages 45 and 46 of his book, he treats a trend which had become crystallized by 1130 or so. "In sculpture and monumental painting, in book illumination and the goldsmith's art, a new style emerged that contrasted sharply with the style of the preceding period" (p. 45). At the top of the next page, he says: "Its earliest manifestations seem to have occurred in Lorraine. . . ." It was my conclusion that his mention of a "new style" which "contrasted sharply with the style of the preceding period" was a reference to the new Early Gothic style in contrast with the preceding Romanesque style. In his text this "new style" is not otherwise defined and I do not find his footnote 62 in which he mentions Boeckler's studies adequate identification of another style.

I cannot believe that a minute examination of each of von Simson's charges would further clarify these disagreements, but if any of your readers should so desire, I would be delighted to extend these comments.

SUMNER CROSBY
Yale University

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THE ART BULLETIN

A QUARTERLY
PUBLISHED BY THE COLLEGE ART ASSOCIATION OF AMERICA

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